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Editorial

This issue centers on the theme of human experience and leadership within evolving social and educational systems. The articles collectively examine how individuals and institutions respond to social expectations, organizational structures, and technological and educational change across diverse contexts.

The issue begins with studies that foreground lived experience and workplace dynamics, highlighting how personal circumstances and institutional support shape wellbeing, behavior, and fulfillment. These are followed by education-focused investigations that examine financial literacy and structural dimensions of schooling, emphasizing the role of educational systems in preparing learners for personal, academic, and economic decision-making.

The final contributions shift toward leadership and systemic transformation, addressing equity in digital access and cross-border educational reforms. Together, these studies illustrate how leadership, policy, and innovation intersect to influence inclusion, continuity, and change.

By bringing these perspectives together, this issue reinforces the journal's commitment to interdisciplinary research that connects individual experiences with broader social, technological, and educational realities, offering insights that are both theoretically grounded and practically relevant.

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Redefining Marital Fulfillment: A Phenomenological Study of Childless Couples

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Abstract

In pronatalist societies like the Philippines, involuntary childlessness is often stigmatized, challenging the identity of married couples. This study explores the lived experiences of five (5) couples who have remained childless for over five years, utilizing a qualitative phenomenological design grounded in Stigma Management Communication Theory (SMCT). Data gathered through in-depth, semi-structured interviews revealed that couples navigate their reality through specific identity negotiation strategies. The analysis identified four key themes: (1) the externalization of cause, where couples attribute infertility to medical realities and "God's will" to buffer self-esteem; (2) an emotional dichotomy characterized by a tension between "ambiguous loss" and dyadic contentment; (3) the role of the extended family as a critical protective buffer against community stigma; and (4) adaptive coping through social parenthood. The study concludes that the Filipino value of "*bahala na*" functions as active spiritual surrender rather than passive fatalism, serving as a potent tool for stigma management. Recommendations focus on marriage and family counseling, specifically the integration of narrative reframing and spiritual interventions to foster resilience and validate non-biological parenting roles.

Keywords: Involuntary Childlessness, Childless Couple, Marital Fulfillment, Stigma Management Communication Theory, Social Parenthood, Marriage and Family Counseling

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1. Introduction

Marriage has long been associated with the expectation of having children, with parenthood frequently framed as a defining marker of marital fulfillment, family continuity, and social identity (McQuillan et al., 2025). Across many cultural contexts, particularly in collectivist societies, the absence of children can lead to questions about marital success and personal completeness, often resulting in stigmatization or social exclusion (Dhar, 2013; Tabong & Adongo, 2013). Yet, an increasing number of couples experience marriage without becoming parents, whether by deliberate choice or due to circumstances such as infertility (Blackstone & Stewart, 2012; Mascarenhas et al., 2012). This evolving social reality calls for a re-evaluation of the traditional narrative that equates marital satisfaction solely with childbearing (Hansen, 2012; Twenge et al., 2003).

Existing literature reveals that childlessness is a multi-dimensional experience shaped by personal, relational, and sociocultural factors. Scholars argue that the conventional voluntary-involuntary distinction does not sufficiently capture the complexity of childless experiences. Añis et al. (2024) demonstrate that for some individuals, the path to childlessness is an active choice influenced by personal history, while for others, it arises from external disruptions, resulting in a complex spectrum of emotions. These decisions are often compounded by systemic factors; Ahmadzadeh Tori et al. (2023) reveal that voluntary childlessness is frequently driven by a combination of individual preferences and social aspects, including financial constraints and forced circumstances, suggesting that government welfare and educational support play a crucial role in family planning decisions. Sociocultural expectations also play a prominent role in these dynamics. Adhikary et al. (2024) emphasize that cultural norms, stigma, and community pressures significantly influence how childless couples perceive themselves and negotiate their identity within society.

Infertility-related studies further highlight the emotional and social challenges faced by couples, especially women. In developing countries, infertility can cause substantial psychological distress and diminished social standing, underscoring the need for healthcare providers to understand the cultural context in which infertility occurs (Dyer, 2002). This is supported by van Balen and Bos (2009), who identify childlessness as a major life problem with significant psychological consequences, particularly in low-resource areas where the social and cultural repercussions are profound yet understudied. At the relational level, Kailaheimo-Lönnqvist et al. (2024) show that life satisfaction among childless individuals can influence both their own and their partner's levels of depression, underscoring the importance of mutual emotional support and shared coping mechanisms.

Despite the challenges, much of the literature also documents positive marital outcomes among childless couples. LaMastro (2001) reports that many couples experience happiness, security, confidence, and optimism in their marital relationship, challenging the stereotype of the unhappy childless union. However, the psychosocial state of these couples is fragile; Dhar (2013) notes that childless couples' experiences are deeply influenced by social culture, which directly affects their coping strategies. The process of navigating a

childless marriage is shaped by how these strategies are employed, whether constructive or ineffective (Mohammadi et al., 2018). From a life-course perspective, Rybińska and Morgan (2019) identify distinct pathways toward childlessness, including the postponement of childbearing and prolonged indecision. Additionally, Ngai and Loke (2022) underscore the significance of family cohesion, adaptability, and social support in reducing infertility-related stress, particularly among couples navigating societal pressures.

Although these studies collectively enrich our understanding of childlessness, several gaps remain. Much of the literature focuses on either the psychological consequences of infertility or the sociocultural pressures associated with not having children. Less attention has been given to the holistic lived experiences of married couples who remain childless, how they construct meaning within their marriage, negotiate external expectations, and cultivate satisfaction despite societal assumptions about parenthood. Furthermore, limited research explores the interplay of emotional, relational, and cultural factors that shape the marital journey of such couples.

Therefore, this study aims to explore the experiences of childless couples in marriage, examining the evolution of their relationships, the challenges they encounter, and the sources of fulfillment they cultivate. By moving beyond the traditional assumption that marital success is tied to parenthood, this research seeks to provide a deeper and more inclusive understanding of how childless couples navigate their lives together. The study contributes to the broader field by addressing gaps in the literature, offering insights into the diversity of marital experiences, and challenging persistent societal narratives surrounding marriage and childbearing.

2. Methodology

This study employed a qualitative phenomenological research design to deeply explore the lived experiences of childless couples within a society dominated by a pronatalist narrative. Grounded in the theoretical underpinnings of Stigma Management Communication Theory (Meisenbach, 2010), this approach was selected to capture how stigma is discursively constructed and managed through the dynamic interactions of married life. By utilizing a qualitative lens, the research aimed to deconstruct the complex psychological, emotional, and social pressures faced by couples who deviate from the traditional reproductive norm, providing a richness of data that quantitative methods could not achieve.

The research was conducted across diverse geographical settings in the Philippines to capture a broad spectrum of experiences. Data collection took place in the municipalities of Kapatagan and Sultan Naga Dimaporo in the province of Lanao del Norte, as well as in the municipality of Aurora in Zamboanga del Sur. To ensure a comprehensive understanding of the phenomenon, the researchers utilized purposive sampling to select five (5) married couples who have remained childless for a minimum of five years. This specific duration was chosen because, in the Philippine context, societal inquiries and pressures regarding reproduction typically intensify significantly after the first few years of marriage (De Los Angeles, 1965; Tudy & Tudy, 2020). The selected participants exhibited a range of marital

durations, including couples married for five, seven, nine, eleven, and fifteen years, thereby providing a longitudinal perspective on how couples navigate the evolving stigma and challenges of a child-centric culture over time.

The primary instrument for data collection was the researcher, who utilized a self-designed, semi-structured interview guide to elicit personal narratives. To ensure the instrument's validity and sensitivity to the delicate nature of the topic, the guide was subjected to review by three external validators prior to deployment. The data gathering process spanned a total of two months, from March to May 2024. Informants were identified through a "call for informants" utilizing referrals from co-workers and relatives. All data were gathered through face-to-face in-depth interviews, a method chosen to facilitate genuine interaction and allow for the observation of non-verbal cues often associated with sensitive topics like infertility and social exclusion.

Data analysis was conducted using a rigorous thematic approach, following the framework established by Braun and Clarke (2006), to interpret the narratives through the lens of the study's theoretical foundation. Following the verbatim transcription of audio recordings, the researchers systematically identified recurring words, phrases, and statements. These were categorized to reveal patterns of expression and stigma management, specifically analyzing how couples embody their family identity despite the absence of children, a dynamic explored in the Philippine context by Cabonce et al. (2019). This analytical process allowed the researchers to identify how couples construct meaning and resilience in the face of external societal expectations.

In qualitative inquiry, the researcher is considered the primary instrument of analysis; thus, acknowledging positionality is essential to ensuring the trustworthiness of the study (Berger, 2015). As a member of the Filipino society in which this study is situated, the researchers possessed an inherent familiarity with the local cultural nuances, specifically the pervasive pronatalist narratives that equate family completeness with childbearing. This cultural insider status facilitated the establishment of rapport and allowed for a deeper sensitivity to the non-verbal cues and indirect communication styles often used by participants when discussing sensitive topics like stigma and infertility. However, to mitigate the risk of projecting personal biases or societal assumptions onto the participants' narratives, the researcher practiced reflexivity throughout the research process (Berger, 2015). This involved the phenomenological technique of epoché or bracketing, wherein the researcher deliberately set aside personal beliefs, experiences, and judgments (Berger, 2015) regarding parenthood and marriage to remain open to the participants' unique lived realities. By maintaining a reflexive journal, the researcher continuously monitored how their own background and interactions might influence the data, ensuring that the findings remained grounded strictly in the voices of the childless couples rather than the researcher's preconceptions.

Ethical considerations were strictly observed throughout the research process to protect the dignity and rights of the participants. The researchers ensured informed consent by providing a detailed letter explaining the study's purpose and obtaining formal, voluntary permission from all participants. Participation was strictly voluntary, with no coercion or

monetary compensation, and participants were explicitly informed of their right to withdraw from the study at any time. To protect the privacy of the couples, strict confidentiality and anonymity were maintained; no real names or identifying details were disclosed in the final report, ensuring that the participants were shielded from further potential stigmatization or gossip within their respective communities.

3. Results and Discussion

This section elucidates the phenomenological experiences of involuntarily childless couples in the Philippines. Through the lens of Stigma Management Communication Theory (Meisenbach, 2010), we analyze how these couples construct their identity, navigate the pronatalist expectations of Filipino society, and employ specific coping mechanisms to maintain marital stability.

The analysis yielded four major themes: (1) The Externalization of Cause: Medical Realities and Divine Will; (2) The Emotional Dichotomy: Oscillating Between Optimism and Distress; (3) The Buffer System: Family Dynamics and Social Support; and (4) Adaptive Coping: Spiritual Surrender and Social Parenthood.

3.1. The Externalization of Cause: Medical Realities and Divine Will

The participants unanimously identified their childlessness as involuntary, stemming from a convergence of biological constraints and spiritual timing. This dual attribution serves as a primary stigma management strategy, allowing couples to externalize the blame away from their personal agency or moral failing.

3.1.1. Medical Factors and Biological Infertility

Participants openly acknowledged physiological barriers, including male factor infertility (impotence) and female reproductive health issues.

> *"Akong bana impotent sya, maoy dili maka-anak."* (My husband is impotent, that is why we can't have a baby.) [Respondent 1] *"Akong asawa naay bikil sa matris niya mao di mi ka anak."* (My wife is infertile, that is why we can't have a baby.) [Respondent 2]

The acknowledgment of medical factors aligns with global literature suggesting that the medicalization of infertility can sometimes reduce stigma by framing the issue as a biological malfunction rather than a character flaw (Greil et al., 2011). However, in developing contexts, the psychological burden remains heavy. Vashkar et al. (2017) note that without adequate psychosocial intervention, these biological realities often cascade into depression and social dysfunction.

3.1.2. Theology of Waiting: "God's Time"

A distinct cultural nuance observed in this study is the heavy reliance on what initially appears to be religious fatalism but is more accurately identified as active spiritual coping. Participants viewed their situation not merely as a medical failure, but as a spiritual waiting period.

"Wala pa jud mi tagae sa Ginoo…magtagad rami kanus-a mi tagaan." (We haven't been blessed by God yet…we will just wait for when we are given.) [Respondent 3]

This narrative reflects the deep-seated Filipino value of "*bahala na*" (Menguito & Teng-Calleja, 2010). While early interpretations framed this attitude as passive resignation, modern psychological frameworks in the Philippine context define it as "determination in the face of uncertainty" and an active "search for the sacred" (Menguito & Teng-Calleja, 2010). Rather than surrendering hope, the couples are surrendering control, effectively engaging in what Lagman et al. (2014) describe as "leaving it to God." By externalizing the timing of parenthood as "God's will" rather than internalizing it as a personal physiological failure, couples construct a protective buffer for their self-esteem. This culturally specific coping mechanism aligns with global findings by Romeiro et al. (2017), who argue that religious coping is a critical moderator of infertility stress, particularly in highly religious Catholic societies like the Philippines.

3.2. The Emotional Dichotomy: Oscillating Between Optimism and Distress

The lived experience of the couples is not monolithic. It is characterized by a complex tension between marital satisfaction and existential distress.

3.2.1. Marital Optimism and Dyadic Cohesion

Contrary to the stereotype that childless marriages are inherently unhappy, several couples reported high levels of contentment, focusing on financial freedom and companionship.

"Okay ra man, kontento pa pud mi nga kami pa duha, maglaag lang mi…and gatigum." (We're okay with just the two of us, we're content spending time together…and saving money.) [Respondent 3]

This validates the "response shift" phenomenon (Chao et al., 2014; Ortega-Gómez et al., 2022; Vanier et al., 2021) observed in quality-of-life studies, where individuals adapt their internal standards to match their reality. As noted by Zapanta et al. (2023), focusing on the dyadic relationship rather than the missing triad (child) allows couples to cultivate resilience. Furthermore, recent Western studies suggest that childless couples often report higher relationship quality than parents due to increased time for emotional intimacy (Hansen, 2012; Keizer & Ivanova, 2017).

3.2.2. The Burden of the "Empty Nest"

However, this optimism is frequently punctuated by distinct emotional distress, manifesting as feelings of inadequacy, anxiety, and envy.

"Malipayon, pero maibog mi sa mga pamilya nga adunay mga anak." (We're happy, but we envy families with children.) [Respondent 2] *"Pressured, usahay mawal-an mig pag-asa, iblame amo self…"* (Feeling pressured, sometimes we lose hope, blaming ourselves…) [Respondent 1]

This supports the concept of "ambiguous loss" (Boss, 2002), where the couple grieves a child that is psychologically present, in their hopes, but physically absent (Okoro Rellias, 2015). Cocchiaro et al. (2020) and Espinol (2021) emphasize that this cycle of hope and disappointment is a primary driver of anxiety in infertile couples.

3.3. The Buffer System: Family Dynamics and Social Support

In a collectivist society, the extended family plays a pivotal role (Li et al., 2025). The study reveals that the family acts as a double-edged sword: a source of pronatalist pressure, but also the primary source of stigma buffering.

3.3.1. Moral Support vs. Societal Pressure

While societal pressure is pervasive, the immediate families of the respondents largely provided "protective buffering."

> *"Ila mi ingnan na mag-ampo lang perminte and di mi nila ipressure jud..."* (They tell us to just pray and not to pressure ourselves...) [Respondent 5]

This finding nuances the existing literature. While Adhikary et al. (2024) highlight community stigma, this study suggests that the immediate family often circles the wagons to protect the couple. Al Sabbah et al. (2025) and Mohaddesi et al. (2022) corroborate that high family support significantly mitigates the negative psychological impacts of infertility. The family reinforces the "God's time" narrative, validating the couple's status despite the lack of children.

3.4. Adaptive Coping: Spiritual Surrender and Social Parenthood

The couples employed active coping strategies to navigate their reality. Two dominant strategies emerged: religious coping and social parenthood.

3.4.1. Religious Coping

Prayer and church attendance were not passive activities but active strategies to manage anxiety.

> *"Isalig ang kaguol sa Ginoo..."* (We entrust our sorrow to God...) [Respondent 1]

Nwaomah & Dube (2018) posit that religion provides a cognitive framework that makes suffering meaningful. By surrendering control to the divine, the couples alleviate the burden of fixing their medical condition, which reduces the psychological strain of self-blame.

3.4.2. Adoption and Social Parenthood

Perhaps the most profound finding is the redefinition of parenthood. When biological conception failed, couples turned to adoption or focused on nieces and nephews.

> *"Nag-adopt mi ug bata dayun mao amo gipa-eskwela..."* (We adopted a child and then we sent them to school...) [Respondent 3]

This illustrates the concept of "social parenthood." In the Philippines, the practice of *pag-ampon* (informal adoption) allows childless couples to perform parental roles without biological ties. This aligns with Daly (1987) and Tracz (2022), who argue that adoption facilitates a transition from infertile couple to family, effectively neutralizing the social stigma of childlessness. By investing resources in nieces, nephews, or adopted children, these couples fulfill the generative need to nurture the next generation (Erikson, 1963), thereby reclaiming their social identity as productive adults.

4. Summary, Conclusion and Recommendations

4.1. Summary of Findings

This study elucidates the phenomenological experiences of involuntarily childless couples in the Philippines, analyzing their identity construction through the lens of Stigma Management Communication Theory (Meisenbach, 2010). The findings reveal that couples navigate the pronatalist expectations of Filipino society not through passive resignation, but by employing specific, active coping mechanisms that foster marital stability.

The participants unanimously attribute their childlessness to a convergence of medical realities and divine will, a dual attribution that serves as a primary stigma management strategy. By framing their situation as "God's time," couples utilize the Filipino cultural value of "*bahala na*" as a form of active spiritual surrender rather than fatalism. This externalization of cause allows them to shift the blame away from personal inadequacy, effectively buffering their self-esteem against the psychological impact of biological infertility.

Emotionally, the marital experience is characterized by a complex dichotomy between optimism and distress. While couples grapple with the ambiguous loss of a hoped-for child and feelings of envy, they simultaneously demonstrate a response shift by recalibrating their expectations. Many couples report high levels of contentment derived from financial freedom and deepened dyadic companionship, challenging the stereotype that childless unions are inherently unhappy.

Socially, the study highlights the pivotal role of the extended family, which functions as a protective buffer. Although societal pressure remains pervasive, immediate family members often reinforce the couple's spiritual narrative, validating their status and mitigating the sting of community stigma. Finally, couples achieve adaptive coping by redefining parenthood itself; through religious devotion and the practice of social parenthood, such as adoption or investing in nieces and nephews, they fulfill their generative needs and successfully transition their identity from infertile to socially productive adults.

4.2. Conclusion

This study challenges the pervasive deficit narrative often associated with involuntary childlessness in pronatalist cultures. By examining the lived experiences of Filipino couples through the lens of Stigma Management Communication Theory (SMCT), the implications of these findings are fundamentally reframed: childlessness is revealed not merely as a private medical condition or a state of lack, but as a complex social performance of identity negotiation. SMCT illuminates that the couples' behaviors are not passive reactions to

tragedy, but strategic communicative acts designed to manage their social standing. Through this theoretical lens, the reliance on "*bahala na*" and the attribution of fertility to God's will are understood not as fatalistic resignation, but as discursive tools used to externalize blame. By linguistically shifting the locus of control to the divine, couples successfully decouple their biological status from their moral worth, thereby accepting the factual reality of childlessness while rejecting the stigmatizing label of failure or incapability.

Furthermore, the application of SMCT underscores that resilience in this context is relational and communicative rather than purely intrapsychic. The theory highlights how social parenthood serves as a stigma reduction strategy that allows couples to perform the socially required role of nurturer without the biological requisite. This suggests that the psychological well-being of childless couples is heavily dependent on their ability to successfully communicate a valid family identity to their community. Consequently, a fulfilling marriage in this context is defined by the couple's shared capacity to construct and maintain a resilient narrative that withstands external pronatalist pressure.

4.3. Recommendations for Marriage and Family Counseling

Based on the findings regarding stigma management and marital resilience, the following clinical implications are proposed specifically for marriage and family counselors:

4.3.1. Adoption of Narrative Reframing Techniques

Counselors may utilize narrative therapy techniques aligned with Stigma Management Communication Theory to help couples reconstruct their identity. Therapists may guide couples in shifting their internal narrative from one of biological failure to one of spiritual waiting or chosen resilience, thereby helping them regain a sense of agency and shared purpose.

4.3.2. Integration of Spiritually-Oriented Interventions

Given the prevalence of "*bahala na*" as an active coping mechanism, practitioners may incorporate spiritual assessments into the counseling process. Rather than viewing religious fatalism as a barrier to agency, counselors may validate the theology of waiting for God's time as a legitimate psychological buffer that protects the couple's self-esteem and reduces anxiety.

4.3.3. Enhancement of Dyadic Cohesion

Therapy sessions may prioritize the strengthening of the marital subsystem independent of the parental role. Counselors may encourage couples to invest in shared non-reproductive goals such as financial stability, travel, or mutual hobbies to cultivate the response shift observed in the study, where satisfaction is derived from companionship rather than child-rearing.

4.3.4. Navigation of Extended Family Boundaries

Recognizing that the extended family serves as both a buffer and a source of pressure, counselors may assist couples in establishing healthy communication boundaries. Interventions may focus on equipping couples with assertive communication scripts to manage pronatalist inquiries from relatives while identifying specific family members who can serve as supportive allies.

4.3.5. Facilitation of Social Parenthood Roles

To address the psychological need for generativity, therapists may introduce social parenthood as a therapeutic goal. Counselors may help couples explore and validate alternative nurturing roles such as adoption, fostering, or active avuncular involvement as fulfilling pathways to achieving a complete family identity.

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Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Administrative Support and Job Satisfaction in Relation to Hospital Employees' Work Behavior

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Abstract

The complexity of human resource management posed challenges for both administrators and employees. This study inspected the relationship between the two independent variables, Administrative Support, and Job Satisfaction, in the dependent variable, Work Behavior. A descriptive-correlational analysis was utilized as a framework for research investigation. The research was conducted in Medina General Hospital; questionnaires were distributed to employees and 101 complete responses were used in the inferential analyses. Administrative Support, Employees' Job Satisfaction, and Work Behavior Questionnaires were used to gather respondents' data. As revealed in the statistical analysis, Administrative Support given in Medina General Hospital was verbally interpreted as High, the job satisfaction of hospital employees was regarded as High, and work behavior among hospital employees was verbally interpreted as Very Evident. Further, inferential analysis showed a weak positive correlation between administrative support and work behavior (r (99) = .47, p < .001), and a moderate positive correlation between job satisfaction and work behavior (r (99) = .60, p < .001). Simple linear regression indicated that job satisfaction significantly explained variance in employees' work behavior (F (1,99) = 58.6, p < .001, R^2 = .37). The weak positive correlation between administrative support and work behavior was discussed in terms of contextual differences between organizational-level supports and individual-level behavior. These findings can help Medina General Hospital refine HR practices to improve service quality.

Keywords: Human Resource Management, Hospital Employees, Administrative Support, Job Satisfaction, Work Behavior

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1. Introduction

Human resource management (HRM) is a complex and vital process that influences organizational success by integrating organization, interaction, behavior, and people. A key element of effective HRM is administrative support, which includes shared decision-making, professional development, leadership expansion, and creating positive work environments. Administrative support has been proven to enhance employee learning, retention, and project longevity, making it a critical factor across various organizational contexts.

This study examines the relationship between administrative support, job satisfaction, and employees' work behavior—specifically innovative and productive behaviors. Job satisfaction, reflecting positive employee attitudes toward work, improves performance and organizational outcomes. Administrative support fosters a supportive climate where employees feel valued, motivated, and encouraged to contribute to organizational goals. Innovative work behavior, crucial for competitiveness and sustainability, relies heavily on transformational leadership and administrative support, which together facilitate creativity and productivity within the workplace.

In the specific context of Medina General Hospital, limited budget allocation (3.7%) and frequent turnover among Human Resource Directors have resulted in low perceived administrative support. This situation has contributed to employee dissatisfaction and decreased productivity due to unclear administrative practices. This study aims to provide insights for improving administrative support and job satisfaction to positively influence employee work behavior, thereby supporting policy development and fostering a healthier organizational environment.

2. Review of Literature

This study is anchored on four theories, namely: Attribution Theory of Fritz Heider (1958), Hackman and Oldham's Job Characteristic to Job Satisfaction Model (1974), Weiner's Three-dimensional Model (1979), and Kelley's Covariation Model (1963, 1973).

Attribution Theory tries to explain why we behave the way we do. Mainly, it seeks to provide a clear understanding of the reasons for one's actions and the reasons for other people's behaviors (Bandahdah, 2017). In this vein, when a person assigns causes to these behaviors, it will help them to feel more in control of their actions and situations.

Moreover, it stipulates how one person thinks and feels about another person, how he perceives him and what he does to him, what he expects him to do or think, and how he reacts to the actions of the other are some phenomena that will treat. Consequently, people are naive scientists who strive to figure out why things happen to them and others (Bandahdah, 2017; Dasborough & Harvey, 2016; Heider, 1958; Martinko & Mackey, 2019).

Significantly, attribution theory is important for organizations because it can help managers understand some of the causes of employee behavior and assist employees in understanding their thinking about their behaviors (Hewett et al., 2018). If you can understand why you behave a certain way and why others around you do so, you better understand yourself, others, and your organization. The perception of the causes of a certain behavior

may affect managers' and employees' judgment and actions. It may also play a significant role in motivation (Lysova et al., 2019).

Attribution theory looks to be a good foundation for furthering our knowledge of various human resource management processes (Guest et al., 2020). HR researchers have recently noticed that knowing how people explain the origins of their behaviors and events might help them understand various HR-related challenges (Hewett et al., 2017). In addition, several narrative reviews of attributional research have found that attributions are essential in the workplace. Still, they also point out that attribution theory has been underused in organizational research (Harvey et al., 2014). Accordingly, high commitment human resource practice will most significantly influence employees' satisfaction, commitment, and retention (Rimi, 2013). In addition, egoistic deprivation and interpersonal and organizational aberrant behavior are boosted by psychological entitlement (Vantankhah & Raoofi, 2018).

Further, also Kelley's Covariation Model (1963, 1973) and Weiner's three-dimensional model (1979) were also considered in this investigation. Weiner (1979) emphasized identifying the dimensions of causality and the relationship between these fundamental qualities of causes and psychological effects is at the heart of the theory. Also, Kelley (1967) hypothesized that the idea defines processes that operate as if the individual was motivated to achieve cognitive mastery of the environment's causal structure.

Moreover, Kelleys' covariation model proposed the three types of information that explain the behavior's cause. Hopper (2018) enumerated: a) Consensus, or whether others would act similarly in a given situation; b) Distinctiveness, or whether the person acts similarly across other situations; and c) Consistency, or whether someone acts the same way each time it occurs (para. 9). Also, Weiner's three-dimensional model hypothesized that people's first effective responses to the actor's intrinsic or extrinsic goals influences their future behavior (Psychology Wiki, n.d.).

Another model that justifies the occurrence of job satisfaction is the Job Characteristic Model. The majority of studies have supported the Job Characteristics Model, which defined as the degree to which a job demands a variety of distinct actions in carrying out the work, involving the use of a variety of skills and talents of the employee (Price & Muller, 1986 as cited in Ali et al., 2014). Hackman and Oldham (1974) mentioned the elements of job characteristics, namely, a) Autonomy, b) Skill Variety, c) Task Significance, and d) Task Identity. Further, Ali et al. (2014) demonstrated the mentioned elements effects on job satisfaction.

Consequently, can contextualize these underlying principles in Medina General Incorporated as causation and relationships between Employees' Perception of Administrative Support, Employees' Job Satisfaction, and Employees' work behavior. Attribution theory will provide a concrete justification of the causes of one's work behavior. Also, Weiner and Job Characteristic model will inspect the intrinsic (Job Satisfaction) and extrinsic (Administrative Support) influence on work behavior. Further, Kelley's Covariation will examine why employees act as they do.

3. Method

3.1. Design of the Study

The study employed a descriptive-correlational design. It describes a phenomenon, and its characteristics, which is the goal of descriptive research. This research is more focused on "how" rather than "what" or "why" something has happened. The data can be obtained qualitatively, but it analyzes the data quantitatively using frequencies, percentages, averages, or other statistical analyses to get the weighted values of the responses from the respondents. Meanwhile, correlational methods often rely on statistical control to rule out the effects of extraneous variables, which provide more accurate estimates of relationships among variables or produce a conservative test of hypotheses (Curtis et al., 2016). The design was considered appropriate for the present study since the researcher explores relationships between variables without controlling or altering them in a correlational study approach. Accordingly, the correlational design in the study aimed to uncover relationships among the endogenous and independent variables to answer the presented research problem.

3.2. Locale of the Study

This study was conducted at Medina General Hospital (MGH). Medina General Hospital is a private tertiary hospital with two hundred (200) beds. At the same time, Medina College has been a private and non-sectarian institution under Medina College, Inc. since June 1963.

Medina General Hospital (MGH) is situated in Ozamiz City. It is used primarily as a private healthcare unit and a teaching and training facility for healthcare workers to earn experience to further their healthcare careers. It is one of the leading general hospitals in the country, with doctors deemed experts in different fields of medicine, including pediatrics, geriatrics, cardiology, nephrology, neurology, oncology, surgical oncology, and general surgery orthopedics, pulmonology, and anesthesiology.

3.3. Respondents of the Study

The study's respondents were selected from the employees of Medina General Hospital. Random sampling was used in selecting the respondents of the study. It assured that each member of the population was sufficiently represented based on the sampling frame. Consequently, a random number generator was used to select the sample from the target population.

The appropriate number of samples were chosen using the G*Power 3.1.9.7 with a medium effect size. G*Power is a tool used to compute statistical power analyses for many tests. Moreover, it will calculate the effect sizes and display the results of power analyses graphically (Faul et al., 2007, 2009). The calculation result suggested that 134 total samples from 219 members of the sampling frame were selected and invited to participate. Of these, 124 questionnaires were returned. After data screening for completeness and missing data (listwise deletion), 101 fully completed questionnaires remained and comprised the analytic sample used for all inferential statistics (correlations and regression). The degrees of freedom reported in the results (e.g., $r(99)$, $F(1,99)$) correspond to this analytic sample size (N

= 101). Where descriptive statistics are reported, they reflect the analytic sample unless otherwise noted.

Rationale for attrition reporting: To avoid ambiguity, the manuscript distinguishes three figures: (a) the number determined by power analysis and invitations (n = 134), (b) returned questionnaires (n = 124), and (c) final complete cases used in analyses after screening (n = 101). This approach is noted here and in the Abstract and Results so readers can follow the sample flow.

3.4. Research Instruments

Three questionnaire instruments were used to gather data: (1) Administrative Support Questionnaire, (2) Employees' Job Satisfaction Questionnaire, and (3) Employees' Work Behavior Questionnaire. Unless noted otherwise, all questionnaires used a 4-point Likert response scale (1 = Strongly Disagree to 4 = Strongly Agree). The instruments were adapted and assembled to reflect constructs relevant to the healthcare context of Medina General Hospital.

3.4.1. Administrative Support Questionnaire (tangible & intangible support)

Source/adaptation: Items were adapted from the literature on administrative/support perceptions (e.g., Peterson, 2016; Barefield & Meyer, 2013) and modified for hospital operations and local context.

Constructs/items: Two subscales — Tangible Support (e.g., provision of materials, resources, emergency assistance) and Intangible Support (e.g., encouragement, mentoring, recognition). The combined scale comprised X items (report the item count here in final draft).

Validity: Content validity was established through a panel of three subject-matter experts (two HR/healthcare practitioners and one academic in HRM) who reviewed item relevance and clarity; items were revised per their recommendations.

Reliability: Cronbach's alpha in the pilot (n = 20) and in the analytic sample were acceptable; in the analytic sample α_tangible = .84, α_intangible = .81, overall administrative support α = .86.

3.4.2. Employees' Job Satisfaction Questionnaire

Source/adaptation: Job satisfaction items were adapted principally from Hackman and Oldham's Job Diagnostic Survey (Hackman & Oldham, 1974) and supplemented by healthcare-specific satisfaction items (Alpern et al., 2013).

Constructs/items: Autonomy, Skill Variety, Task Significance, Task Identity — each operationalized with several items consistent with the Job Characteristics framework.

Validity: Content validity established by the expert panel; construct structure examined during pilot testing.

Reliability: Cronbach's alpha for the subscales in the analytic sample: autonomy α = .78, skill variety α = .82, task significance α = .80, task identity α = .79; overall job satisfaction α = .88.

3.4.3. Employees' Work Behavior Questionnaire (Innovative & Productive work behavior)

Source/adaptation: Items were adapted from instruments and conceptualizations of innovative and productive workplace behaviors in the literature (e.g., AlEssa & Durugbo, 2021; Purwanto et al., 2020; Afsar & Umrani, 2019). Items were contextualized for hospital tasks and routines.

Constructs/items: Innovative Work Behavior (idea generation, championing, implementation) and Productive Work Behavior (task focus, efficient use of time/resources).

Validity: Content validity checked by the expert panel; item clarity tested in the pilot. Construct validity was evaluated via exploratory factor analysis during instrument development (items loaded on the intended factors with loadings > .40).

Reliability: Analytic sample alphas: innovative work behavior α = .85, productive work behavior α = .87, overall work behavior α = .90.

Pilot testing: Instruments were piloted with 20 hospital staff (not included in the final analytic sample). Feedback informed minor wording changes and item ordering. All scales demonstrated satisfactory internal consistency in the pilot and in the final analytic sample.

4. Results and Discussion

4.1. Employees' Perception of the Administrative Support Given in the Organization in Terms of Tangible and Intangible Support

Table 1 shows the employees' perception of the administrative support given by the organization in terms of tangible and intangible support. The result of the study revealed that the perceived tangible support given by the administration to its hospital employees is high (*M*=3.19; *SD*=0.77); intangible support (*M*=3.11; *SD*=0.74). Meanwhile, the overall administrative support is high (*M*=3.11; *SD*=0.74). The perceived positive work climate in an organizational setting provides a vital piece towards achieving organizational goals.

Table 1. *Respondents' Perception on Administrative Support*

Constructs	Mean	Standard Deviation	Interpretation
Tangible Support	3.19	0.77	High
Intangible Support	3.11	0.74	High
Overall Administrative Support	3.15	0.76	High

Note: Scale: 4.00-3.25 Very High (VH), 3.24-2.50 High (H), 2.49-1.75 Low (L), 1.00-1.74 Very Low (VL)

The study's findings revealed that hospital employees were overall satisfied with the support given to them by their respective department heads and administrators. However, the socio-ecological dynamism manifested in the organization and administrator to employee harmony contributes to positivism among employees' perception of administrative support. Consequently, extrinsic factors such as motivation provided by department heads towards their subordinates also contributed to the findings.

Noticeably, the disclosed analysis was inconsistent with the studies conducted in this field. Moilanen et al. (2020) revealed that health care professionals were dissatisfied with the administrative support they received. Likewise, organizational employees perceived that administrators were unsupportive of the tangible and intangible support given to them (Saleem et al., 2020). Hence, the revealed findings of the study may supplement the lack of administrative support given in an organization by thoroughly inspecting its constructs analysis.

As cited by Murphy (2022), Tangible Support is physical support given to employees to produce a product or service. As presented earlier, hospital employees had high regard for this construct. An in-depth analysis of its indicators disclosed that the major contributing factor to this positive regard could be attributed to the administration's effort to extend help to employees in crucial and emergencies. In addition, the willingness of the organization and its administrators to provide instrumental support among employees in concrete means fostered a positive effect on the respondents' perceptions of this latent variable.

Further, another construct to consider is intangible support. Can express Intangible support in the form of motivation or goodwill. As disclosed in the operationalized indicators for intangible support, the administrators' motivational techniques to their subordinates in performing their job-embedded duties and responsibilities were the primary contributor to the revealed measure in this construct. Can deduce motivation that this factor can be beneficial or detrimental to organizational success. Hence, it is a challenge for organizational administrators to motivate their employees to develop a culture of excellence.

Given these, this research may post a novel contribution to this body of knowledge, for it unconventionally revealed findings that challenged the hypothetical assumptions in this parameter. Consequently, this research will provide an empirical basis that considers the importance of providing sufficient tangible and intangible support to foster positive working attitudes among employees. In this manner, these findings will help solve the perennial organizational dispute of low-level administrative support given at the organizational level.

4.2. Employees' Level of Job Satisfaction

As reflected in Table 2, the overall job satisfaction of Medina General Hospital Employees was regarded as high (M=3.22; SD=0.68). An analysis of the constructs of Job Satisfaction revealed that had interpreted three constructs as very high, namely, Skill Variety (M=3.32; SD=0.65), Task Significance (M=3.29; SD=0.65), and Task Identity (M=3.26; SD=0.66). Furthermore, autonomy was the only construct interpreted as high (M=3.00; SD=0.84).

The findings showed that the hospital employees were satisfied with their job-related functions and responsibilities as enumerated in their job descriptions. Generally, this finding was contributed by an output-based system, work-from-home arrangements, independence in the performance of duties, and accurately written job descriptions showcased in the organization. Further, organizational focus on skill development, opportunities for continuing professional growth, and practical applications of job-related duties and responsibilities were also considered indicators of employee job satisfaction.

Table 2. *Respondents' Perception on Level of Job Satisfaction*

Constructs	Mean	Standard Deviation	Interpretation
Autonomy	3.00	0.84	High
Skill Variety	3.32	0.65	Very High
Task Significance	3.29	0.64	Very High
Task Identity	3.26	0.66	Very High
Overall Level of Job Satisfaction	3.22	0.68	High

Note: Scale: 4.00-3.25 Very High (VH), 3.24-2.50 High (H), 2.49-1.75 Low (L), 1.00-1.74 Very Low (VL)

Healthcare organizations are social systems in which human resources are the most critical factor (Specchia et al., 2021), as job satisfaction is heavily inclined with the effectiveness of the human resources; thus, it creates a bridge between job satisfaction and job-related function realization. Studies have demonstrated the impact of job satisfaction on the motivation of workers, while the level of motivation impacts productivity, hence increasing the performance of organizations (Aziri, 2011). Hence, the high regard of hospital employees for their job satisfaction mirrored advantages to the organizational success of Medina General Hospital. Employees who are satisfied with their job-related functions may transpire in the performance of their duty, thus helping the hospital to serve its clientele by providing professional patient care and support.

In this vein, the revealed satisfaction among hospital employees in their job-related duties and responsibilities was mirrored by the constructs that underlie the operationalized instrument - autonomy, which revealed that employees were given the discretion in work-related judgments and provided a high degree of independence in the organization. This posited high regard among employees' perceptions in this construct.

Furthermore, the construct skill variety noticeably gathered the highest mean equivalent. It resulted from organizational efforts to promote the development of diversified skills in the performance of duty. The opportunity for employees to grow in the workplace and the constant skill upgrading by the organization seemed to be an effective mechanism that resulted from positive work culture. Further, the innate job description of the employees that stressed skill acquisition was also considered a factor that leads to employees' job satisfaction.

Another construct of investigation that yielded a very high level of perception was task significance. The perceived enactment between the job description and its practical application in the organization contributed to this. Also, the connection between organizational goals and objectives to job description allowed employees to be satisfied with their job. In addition, the dynamic transition of theories to practice simplified the abstract endeavor among employees in realizing organizational visions, which radiates to employees' job satisfaction.

As to task identity, hospital employees had a very high perception of this construct. The level of perceived task identity was justified by Medina General Hospital administrators'

initiatives to lessen the burden of employees on task completion. However, factors such as appropriate recognition of employees' job performance and co-workers' help in task completion circumscribed the results.

Organizations may strategize their work-arrangement strategies and employees' job evaluation assessment based on the findings being revealed in these contexts. As suggested in this investigation, a multi-perspective analysis effectively justified employees' job satisfaction. Thus, programs and implementations that promote employees' autonomy, skill variety, task significance, and task identity are vital in determining the level of job satisfaction of employees in an organization.

4.3. Perceived Work Behavior of Employees in the Organization as to Innovative and Productive Work Behavior

Table 3 divulged the perceived work behavior of employees in Medina General Hospital; verbally interpreted the overall work behavior among hospital employees as Very Evident (*M*=3.38; *SD*=0.62). Further, both constructs of the variable were perceived as Very Evident, namely, Innovative Work Behavior (*M*=3.29; *SD*=0.61) and Productive Work Behavior (*M*=3.46; *SD*=0.63).

Table 3. *Perceived Work Behavior of Employees*

Constructs	Mean	Standard Deviation	Interpretation
Innovative Work Behavior	3.29	0.61	Very Evident
Productive Work Behavior	3.46	0.63	Very Evident
Overall Work Behavior	**3.38**	**0.62**	**Very Evident**

Note: Scale: 4.00-3.25 Very Evident (VE), 3.24-2.50 Evident (E), 2.49-1.75 Less Evident (LE), 1.00-1.74 Not Evident (NE)

Findings posited high regard among employees' perceived work behavior at the individual level. As the conceptualized indicators explain, innovativeness and productivity contribute to the employees' work behavior. As mentioned in this study, the variable work behavior can be effectively operationalized at the individual level. Thus, it should effectively inspect factors involving employees' motivation and interest.

Purwanto et al. (2020) revealed that work behavior has a very positive and significant effect on work performance. This finding revealed the causality of work behavior in understanding how employees effectively perform their duties. Therefore, it can be conclude that the empirical results herein describe the hospital employees' effectiveness in performing their duties.

Relative to the construct of Innovative Work Behavior, employees perceived their work competencies as relentlessly challenging the status quo. Hospital employees develop customized processes that encourage new ideas and motivate others to be proactive and resourceful. Further, the findings revealed that the employees' mentoring of co-employees was manifested. As disclosed in the operationalized instrument, employees inspired their co-employees to develop and implement new ideas and ways to approach work that will benefit the hospital.

As to productive work behavior, the organization's substantial use of working hours was disclosed as the contributing factor to the very evident productive work behavior in Medina General Hospital. Further, the use of motivational techniques employed by co-workers inculcated positive working attitudes towards hospital employees. Also, the appropriate resource use yielded high-quality outputs among hospital employees.

Consequently, the descriptive analysis implied that for organizations to promote positive work behavior among employees. Therefore, the administrators should inspect this variable in the individual contributing factors. Further, the socio-ecological interactions between employees and administrators should be anchored toward fostering innovativeness and productivity in the workplace.

4.4. Significant Relationship between Administrative Support and Employees' Work Behavior

The relationship between administrative support and employees' work behavior was positively correlated, $r(99) = .47$, $p < .001$. The result is statistically significant at $\alpha = .05$. Overall, there was a weak positive correlation between these variables. Although both variables tend to rise in response to one another, the relationship is not particularly strong and causality cannot be inferred from these correlational findings.

As cited by studies being conducted, administrative support operates at the organizational structure level and influences organizational culture (Barefield & Meyer, 2013), while work behavior was grounded on the individual factor perspective, which is subject to employee's ability, interest, and motivation (Siregar et al., 2019). Thus, the discrepancy among the levels of measurement that can justify these variables accounts for the weak correlation obtained in this investigation. Accordingly, administrative support's importance in redirecting employee energy and learning toward innovation has considerable practical significance (Riaz et al., 2018).

Managers are responsible for using individual energy due to their crucial mediating function in the creative process (Diamantidis & Chatzoglou, 2018). In this vein, organizations should recognize the importance of administrative support factors that impacting employees' work behavior. Consequently, organizations could select the most energized and opportunity-seeking employees to assign them to projects involving innovative ideas, provide support in the form of autonomy, power, information, and rewards, and promote them as an inspiration for other workers to motivate them (Riaz et al., 2018).

Table 4. *Relationship between Administrative Support and Employees' Work Behavior*

Variable	R-value	p-value	Strength of Association
Administrative Support and Employees' Work Behavior	0.47	p<0.0001	Weak Positive Correlation

Note: Significance level is set to p <.05

As for organizations, the variable work organization seemed too vague. However, qualitative analysis of employees' interests and work motivation could be a breaking point

for organizational interventions. Further, the findings serve as benchmarks for investigations that inspect the mediation and causation of motivation towards work innovativeness and work behavior.

4.5. Significant Relationship between Job Satisfaction and Employees' Work Behavior

The relationship between job satisfaction and employees' work behavior was positively correlated, $r(99) = .60$, $p < .001$. The result is statistically significant at $\alpha = .05$. Overall, there was a moderate positive correlation between these variables.

A closer look at the revealed relationship implied the importance of job satisfaction in employees' work behavior and vice-versa. However, the findings do not provide causality towards the correlated variables; hence it cannot be justified which among these two variables caused the directionality of the relationship. In contrast, the relationship revealed considered the constructs for each variable and served as contributing indicators towards the moderate positive correlation that has been found.

The findings revealed were consistent with the disclosed studies in this parameter. Czarnota-Bojarska (2015) mentioned work behavior as a detrimental factor in an organization; he revealed that job satisfaction is significantly associated with work behavior. This was supported by Fatima et al structural equation modeling analysis (2012); there was a positive association between job satisfaction and productive work behavior. Consequently, the path analysis conducted by Mount et al. (2006) also indicated the effects of job satisfaction on employees' work behavior.

In this vein, organizational entities may derive their organizational culture and practices from the revealed relationship. It can be deduced that employees' high job satisfaction correlates with evident positive work behavior. Thus, proposed program implementations should promote employees' satisfaction in their work-related duties to foster a good working attitude.

Table 5. *Relationship between Job Satisfaction and Employees' Work Behavior*

Variable	R-value	p-value	Strength of Association
Job Satisfaction and Employees' Work Behavior	0.60	p<0.0001	Moderate Positive Correlation

Note: Significance level is set to p <.05

4.6. Job Satisfaction as a Predictor of Work Behavior

A simple linear regression was used to examine job satisfaction as a predictor of employees' work behavior. Job satisfaction significantly explained employees' work behavior variance, $F(1,99) = 58.6$, $p < .001$, $R^2 = .37$, adjusted $R^2 = .37$. The predictor job satisfaction ($B = 0.641$, $SE = 0.0837$, $t = 7.65$, $p < .001$) indicated that an increase of one unit in job satisfaction was associated, on average, with a 0.64 unit increase in employees' work behavior.

The disclosed analysis further implies that apart from the positive directionality in the relationship among the independent and dependent variables, a high level of job satisfaction constitutes a very evident innovative and productive work behavior among

hospital employees. Furthermore, job satisfaction in the context of autonomy, skill variety, task significance, and task identity was a predictor of work behavior mirrored in employees' innovative and productive work behavior. Hence, this causality can serve as a basis for Medina General Hospital to improve the work behavior among hospital employees.

Hongying (2007) mentioned that understanding job satisfaction is essential in describing employees' work attitudes and behavior. Job satisfaction significantly and favorably influences job performance, thus resulting in productive work behavior (Nemteanu & Dabija, 2021). Hence, the revealed findings in this investigation were consistent with the explored parameters in this body of knowledge.

Given the consistently proven hypothetical assumptions, organizations may construct an organizational framework for promoting productive and innovative work behavior through the constructs considered in this investigation. Furthermore, the importance of promoting autonomy, skill variety, task significance, and task identity radiates in employees' work behavior. Thus, organizational administrators and policymakers may mirror the reflected findings in this study in their respective departments, offices, or organizations.

Table 6. *Linear Regression Analysis between Job Satisfaction and Employees' Work Behavior*

Model	R	R^2	Adjusted R^2
1	0.610	0.372	0.365

Omnibus ANOVA Test

	Sum of Squares	Df	Mean Square	F	p
JOB SATISFACTION	6.82	1	6.818	58.6	< .001
Residuals	11.52	99	0.116		

Model Coefficients - WORK BEHAVIOR

Predictor	Estimate	SE	T	p	Stand. Estimate
Intercept	1.313	0.2710	4.85	< .001	
JOB SATISFACTION	0.641	0.0837	7.65	< .001	0.610

4.7. Summary of Results

This study aimed to provide hospital employees and administrators with feedback on administrative support, job satisfaction, and work behavior. The analytic sample used for inferential analyses consisted of 101 complete responses; earlier stages included 134 invited

and 124 returned questionnaires. Key findings: (1) administrative support was verbally interpreted as High; (2) job satisfaction was High; (3) work behavior was Very Evident; (4) weak positive correlation between administrative support and work behavior; (5) moderate positive correlation between job satisfaction and work behavior; (6) job satisfaction significantly explained variance in work behavior.

As disclosed in the data analysis made, the following were the revealed descriptive and inferential findings:

a. administrative support given in Medina General Hospital was verbally interpreted as high;
b. the job satisfaction of Medina General Hospital Employees was regarded as high;
c. work behavior among hospital employees was verbally interpreted as Very Evident;
d. there was a weak positive correlation between administrative support and employees' work behavior;
e. job satisfaction and employees' work behavior were moderately positively correlated; and
f. job satisfaction significantly explained the amount of variance in employees work behavior.

5. Conclusion and Recommendations

5.1. Conclusion

The findings point out that tangible and intangible support are essential in the development of a strong feeling of administrative support within an organization. Encouragement of such factors as autonomy, skill variety, task significance, and task identity play a vital role in enhancing job satisfaction in relation to employees' responsibilities and duties. Work behavior of employees is enhanced by their innovativeness and productivity in the execution of work. But, while quantifying work behavior within an organizational setting, administrative support was an ineffective linked variable because of the varying degrees of the involved factors. On the other hand, job satisfaction was directly proportional to work behavior and is an important predictor of workers' work behavior.

5.2. Recommendations

The study thus indicates that organizational administrators, department heads, and senior officials should, therefore, provide employees with what is needed both materially or immaterially. This includes course-programs offering employees improved autonomy alongside skill variety, task significance, and task identity in a corporate setting. It's a call for Human Resource directors to consider evaluating on a regular basis employee work behavior in respect to innovativeness and productivity. Future researchers should construct more localized tools for determining the relationship between administration support and work behavior, improving the hypothetical assumptions identified in this study. Finally, revisiting existing frameworks on work behavior with job satisfaction being a cardinal predictor of employee performance is suggested to organization administrators and policy makers.

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Conflict of Interest

The researcher declares that there is no conflict of interest regarding the conduct and publication of this study. No financial, personal, or institutional interest influence the outcomes, interpretations, or reporting of the findings. This research was conducted solely for academic purposes and in pursuit of contributing to educational knowledge and practice.

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The Influence of Financial Literacy on the Budgeting or Spending Behavior of Grade 12 ABM Students

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Abstract

Financial literacy is a critical competency for young adults navigating increasingly complex economic environments. This study evaluates the influence of financial literacy, specifically budgeting, saving and investing, and debt management, on the spending behavior of Grade 12 Accountancy, Business, and Management (ABM) students. Utilizing a quantitative descriptive-correlational research design, the study assessed 45 respondents regarding their financial proficiency and self-reported spending habits. The findings reveal that students possess a High level of financial literacy in budgeting and saving/investing knowledge, but only a Moderate understanding of debt management. In terms of behavior, respondents demonstrated a High level of responsible spending, particularly in prioritizing needs over wants and paying debts on time; however, a significant behavioral gap was identified in the Low frequency of tracking daily expenses, indicating a disconnect between theoretical planning and practical monitoring. Pearson correlation analysis confirmed a significant positive relationship between spending behavior and knowledge of both budgeting ($p < .05$) and saving ($p < .05$). Conversely, debt management knowledge showed no significant correlation with current spending practices ($p > .05$). The study concludes that while ABM students possess strong theoretical foundations in asset management which drive responsible spending, they lack depth in debt-related concepts and the practical discipline of expense monitoring. Recommendations include integrating experiential learning tools for expense tracking and intensifying instruction on credit and liability management within the ABM curriculum to bridge the gap between classroom concepts and real-world application.

Keywords: Financial Literacy, Budgeting Behavior, Spending Behavior, ABM Students, Debt Management

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1. Introduction

Financial literacy has emerged as a critical competency for young individuals, involving the knowledge of financial concepts (such as budgeting, saving, investing, and debt) as well as the behaviors and attitudes needed to apply this understanding in decision-making (OECD, 2020). For senior high school students, especially those in the Accountancy, Business, and Management (ABM) strand, financial literacy forms part of the foundational skills necessary for both academic success and future financial independence. As these students are being prepared for business- and finance-related careers, developing a strong level of financial literacy becomes even more vital.

Despite growing awareness of financial education, global assessments indicate that many students still exhibit low to moderate levels of financial competency. The OECD (2020) reported that many adolescents struggle to apply financial knowledge to real-world scenarios: in PISA assessments, around 20% of 15-year-olds score very low on tasks involving financial decision-making, and only about 31% reach levels sufficient for managing basic but meaningful financial tasks (e.g., bank accounts). The report also highlights that long-term financial decisions, such as taking on student loans, pose a risk of indebtedness later in life.

Recent studies in the Philippine context support these findings: for example, Saripada et al. (2024) found a significant relationship between financial literacy and spending habits among senior high school students. Another investigation by (Dela Rama et al., 2024; Gabay et al., 2024) reported that although SHS students generally understand financial knowledge, they struggle to apply it, particularly when managing debt and using borrowing (i.e., credit). Meanwhile, Daculan (2025) found that students' saving habits and spending practices vary significantly depending on their level of financial knowledge, indicating a strong link between literacy levels and financial behaviors.

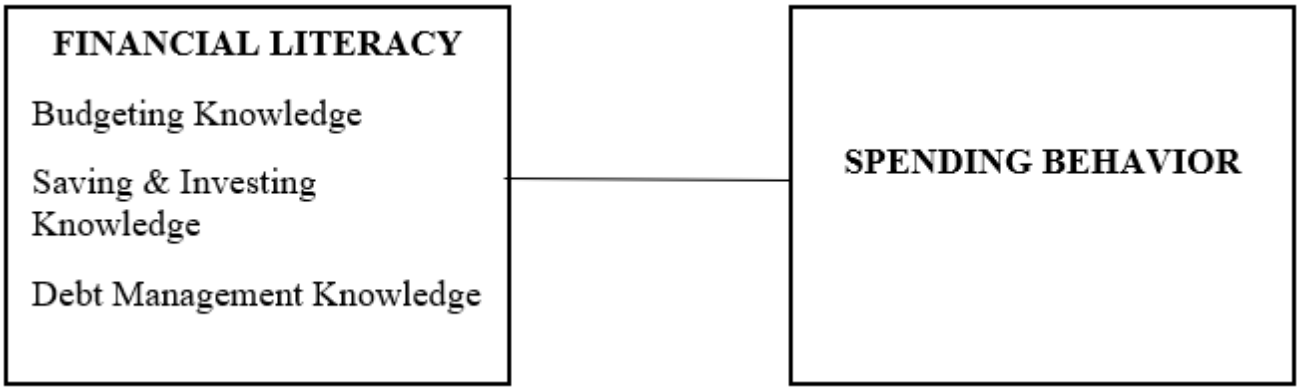
Budgeting and spending behavior are central indicators of financial responsibility. Students who exhibit higher financial literacy tend to plan their budgets, track expenses, avoid impulsive buying, and demonstrate disciplined spending patterns (Mancone et al., 2024). Conversely, those with limited financial knowledge are more prone to overspending, accumulating unnecessary debt, or failing to save for future needs (Manipol & Pabelona, 2025). However, while financial literacy research has grown in recent years, there remains a lack of localized studies focusing specifically on the budgeting and spending behavior of Grade 12 ABM students in the Philippine senior high school context.

Given these gaps, this study seeks to determine the influence of financial literacy on the budgeting and spending behavior of Grade 12 ABM students. By understanding how financial knowledge relates to actual financial behavior, the study aims to provide evidence-based insights that can support schools, teachers, and policymakers in strengthening financial education programs for youth.

1.1. Conceptual Framework

Below, Figure 1, is a conceptual framework showing how financial literacy influences budgeting/spending behavior among Grade 12 ABM students.

Figure 1. *Conceptual Framework of the Study*



In the proposed framework, financial literacy is the primary independent variable, comprising three sub dimensions: budgeting knowledge, saving and investing knowledge, and debt management knowledge. These components are hypothesized to exert a positive influence on the budgeting and spending behavior of Grade 12 ABM students, such that greater financial knowledge translates to more responsible financial practices. Empirical research supports this notion: for example, financial literacy has been linked to improved financial behavior among youth, including more disciplined saving and spending (Ablay et al., 2023). Altogether, this framework theorizes that financial literacy has impacts on spending practices and actual financial behavior to shape students' budgeting and spending outcomes.

Recent studies among Philippine senior high school students have demonstrated that financial literacy — especially in saving, budgeting, and investing — significantly predicts financial behavior, including saving, spending habits, and financial goal setting (Pondang et al., 2024). In the Philippine context, a study among Carlos P. Garcia Senior High School students found a significant positive relationship between financial literacy and informed spending habits (Saripada et al., 2024). Similarly, a study in Gumaca, Quezon reported that financial literacy significantly predicts spending behavior and recommended integrating personal finance education into the senior high school curriculum (Vital et al., 2025). Meta-analytic evidence also indicates that financial literacy is a key predictor of financial behavior and overall financial well-being, underscoring the importance of equipping students with knowledge and skills to manage money effectively (Choowan et al., 2025). Based on these findings, the study proposes that financial literacy, operationalized through the subdimensions of budgeting knowledge, saving and investing knowledge, and debt management knowledge, influences the budgeting and spending behavior of Grade 12 ABM students. To examine these relationships, descriptive statistics will summarize students' financial literacy levels and spending behavior, while correlational and regression analyses will determine the strength and direction of the relationship between financial literacy components and budgeting/spending behavior. Validated questionnaires will be employed to measure financial literacy subdimensions and spending behavior, using Likert-scale items to capture students' budgeting practices, saving tendencies, and responsible expenditure patterns.

2. Method

This study employed a quantitative descriptive-correlational research design to determine the influence of financial literacy on the budgeting or spending behavior of Grade 12 ABM students. A descriptive approach was used to measure students' levels of financial literacy and spending behavior, while the correlational design examined the relationships among the variables. This design is appropriate when the goal is to identify associations between measurable constructs without manipulating variables (Pondang et al., 2024; Daculan, 2025).

2.1. Research Respondents

The participants of the study were Grade 12 students enrolled in the Accountancy, Business, and Management (ABM) strand at a public senior high school in one of the schools in Ozamiz City during School Year 2025–2026. A total of 45 respondents participated in the study. The sample size is consistent with recommended minimum requirements for correlational studies involving small populations (Fraenkel et al., 2022).

2.2. Research Instrument

Data were collected using a structured questionnaire divided into two primary sections. The first section, the Financial Literacy Scale, assessed the respondents' proficiency across three domains: budgeting knowledge, saving and investing knowledge, and debt management knowledge. The second section, the Budgeting or Spending Behavior Scale, evaluated the students' spending discipline, budgeting habits, and financial decision-making. To ensure instrument validity, the items for both scales were adapted from established financial literacy and behavior instruments utilized in recent research by Vieira et al. (2020).

2.3. Data Gathering Procedure

The data gathering procedure commenced with securing formal approval from the school principal and research coordinator. In strict adherence to ethical guidelines for studies involving minors (APA, 2020) and DepEd Order No. 39, s. 2016, necessary parental consent and student assent were obtained prior to participation. Subsequently, the adopted questionnaires were administered during designated class periods. To guarantee anonymity and confidentiality, respondents were instructed to refrain from writing their names on the instruments. Once the students completed the survey, the questionnaires were retrieved and carefully checked for completeness before the data were encoded into statistical software for analysis.

2.4. Data Analysis

Descriptive statistics (mean, median, and standard deviation) were used to summarize students' levels of financial literacy and spending behavior. To determine the relationship between financial literacy components and budgeting/spending behavior, Pearson's correlation coefficient was utilized, as the data met normality assumptions. Interpretation of correlation strengths followed conventional statistical guidelines. The significance level was set at α = .05 (Creswell & Creswell, 2023).

2.5. Ethical Considerations

The study adhered to ethical standards by ensuring voluntary participation, confidentiality, and informed consent. Respondents were assured that their answers would be used solely for academic purposes and reported in aggregate form to protect identities. Data were stored securely and will be disposed of according to institutional guidelines.

2.6. AI Use Statement

This study utilized AI-assisted tools, specifically OpenAI's ChatGPT, to support the development of selected research components such as generating initial drafts of the introduction, conceptual framework, and methodological descriptions. The researcher reviewed, validated, edited, and refined all AI-generated content to ensure accuracy, contextual relevance, and alignment with the study's objectives. The use of ChatGPT was limited to enhancing clarity and organization of written sections; it did not perform data collection, statistical analysis, interpretation of findings, or draw conclusions, which remained solely the researcher's responsibility.

AI tools such as ChatGPT are increasingly recognized for their usefulness in improving academic writing efficiency, organization, and idea generation, provided that human oversight and verification remain central to the research process (Kung et al., 2023; Zhang, 2025). The integration of AI in this study adhered to ethical standards by maintaining transparency, accuracy, and academic integrity throughout the research process.

3. Results

3.1. Level of Financial Literacy of Grade 12 ABM Students

The study assessed financial literacy across three components: budgeting knowledge, saving and investing knowledge, and debt management knowledge.

Table 1 presents the descriptive statistics for the three components of financial literacy assessed among Grade 12 ABM students: budgeting knowledge, saving and investing knowledge, and debt management knowledge.

Table 1. *Financial Literacy Level of Grade 12 ABM*

Component	*N*	Mean	*SD*	Interpretation
Budgeting Knowledge	45	26.32	6.45	High
Saving & Investing Knowledge	45	26.29	6.83	High
Debt Management Knowledge	45	21.62	8.29	Moderate

Scale Range and Verbal Interpretations:

Average scores	*Qualitative Description*	*Interpretation*
22.01-30.00	*High*	*Demonstrates strong financial literacy and understanding of concepts.*
15.01-22.00	*Moderate*	*Shows adequate understanding but may need improvement in some areas.*
7.01.41-15.00	*Low*	*Possesses limited financial literacy; requires further learning and practice.*
0.00-7.00	*Very Low*	*Possesses limited financial literacy; requires further learning and practice.*

As shown in Table 1, the respondents demonstrated a High level of literacy in two of the three domains. Budgeting Knowledge obtained the highest mean score (*M* = 26.32, *SD* = 6.45), closely followed by Saving and Investing Knowledge (*M* = 26.29, *SD* = 6.83). These scores fall within the 22.01–30.00 range, indicating that students possess a strong understanding of concepts related to planning expenses and accumulating assets.

In contrast, Debt Management Knowledge received the lowest mean score of 21.62 (*SD* = 8.29). This score falls within the 15.01–22.00 range, corresponding to a Moderate interpretation. Additionally, the standard deviation for Debt Management (*SD* = 8.29) is higher than that of the other two components, suggesting a wider variability in students' understanding of debt-related concepts compared to their knowledge of budgeting and saving.

3.2. Level of Budgeting or Spending Behavior

Table 2 displays the descriptive statistics for the spending behavior of the Grade 12 ABM students. The data reveals the specific financial habits practiced by the respondents, ranging from budgeting allowances to tracking expenses.

Table 2. *Spending Behavior of Grade 12 ABM*

N	Mean	Median	*SD*	Interpretation
45	3.79	3.78	0.299	High

Scale Range and Verbal Interpretation

Range	*Qualitative Description*	*Interpretation*
4.21 – 5.00	*Very High*	*Demonstrates excellent and responsible spending behavior.*
3.41 – 4.20	*High*	*Shows good spending behavior; students are generally careful and disciplined with their expenses.*
2.61 – 3.40	*Moderate*	*Displays average spending behavior; sometimes responsible but may overspend occasionally.*
1.81 – 2.60	*Low*	*Indicates poor spending habits and limited financial control.*
1.00 – 1.80	*Very Low*	*Shows very poor spending behavior; highly impulsive and unplanned spending.*

Table 2 result indicates that, on average, the Grade 12 ABM students have a high level of spending behavior (mean = 3.79 on a 5-point scale). Given the scale interpretation (3.41–4.20 = "High"), this suggests that these students are generally careful and disciplined with their expenses. In other words, they are not spending recklessly; rather, they show fairly mature financial habits relative to their peers. This is a promising baseline, because it suggests that ABM students, who are presumably more exposed to business and finance education, are not inherently impulsive spenders, but may already have developed a degree of self-regulation in their monetary behavior.

3.3. Relationship Between Financial Literacy and Spending Behavior

Table 3 presents the results of the Pearson Product-Moment Correlation (Pearson *r*) analysis used to determine the significant relationship between the students' financial literacy domains and their spending behavior.

Table 3. *Correlation Results*

Financial Literacy Component	*r*-value	*p*-value	Interpretation
Budgeting Knowledge → Spending Behavior	.387	.009	Moderate positive, significant
Saving & Investing Knowledge → Spending Behavior	.333	.025	Moderate positive, significant
Debt Management Knowledge → Spending Behavior	.156	.308	Weak positive, not significant

As shown in Table 3, the analysis reveals varying degrees of relationship between the variables. A moderate positive correlation was found between Budgeting Knowledge and spending behavior (r = .387). The calculated p-value of .009 is less than the 0.05 level of significance, leading to the rejection of the null hypothesis. This indicates that as students' knowledge of budgeting increases, their responsible spending behavior also improves significantly.

Similarly, a moderate positive correlation was observed between Saving and Investing Knowledge and spending behavior (r = .333). With a p-value of .025, the relationship is statistically significant, and the null hypothesis is rejected. This suggests that students who are more knowledgeable about saving and investing tend to exhibit better spending habits.

In contrast, the relationship between Debt Management Knowledge and spending behavior yielded a low positive correlation (r = .156). However, the computed p-value of .308 is greater than the 0.05 significance level. Consequently, the study failed to reject the null hypothesis for this variable. This implies that among these respondents, knowledge of debt management does not have a statistically significant influence on their current spending behavior.

3.4. Summary of Results

The descriptive analysis reveals that the respondents possess a generally High level of financial literacy, specifically excelling in Budgeting Knowledge and Saving and Investing Knowledge. However, a distinct gap exists in Debt Management Knowledge, which was rated only as Moderate and exhibited higher variability among students. In terms of financial habits, the students demonstrated a High level of responsible spending behavior, characterizing them as disciplined and careful with their expenses. The inferential analysis confirms that this positive behavior is significantly linked to their understanding of budgeting and saving concepts, as evidenced by the moderate positive correlations found. Conversely, the study established that knowledge of debt management does not significantly influence current spending habits, suggesting that this specific domain of literacy remains theoretically detached from the daily financial decisions of the students.

4. Discussion

4.1. Financial Literacy Status of ABM Students

The assessment of financial literacy among Grade 12 ABM students revealed a distinct dichotomy in their knowledge base. The respondents demonstrated a High level of proficiency in Budgeting Knowledge and Saving and Investing Knowledge. This aligns with

the findings of Templa et al. (2025), who observed that students exposed to specialized business curricula often exhibit superior understanding of asset accumulation and expense planning compared to their non-ABM peers. This high proficiency suggests that the ABM strand effectively transfers theoretical concepts related to wealth generation and resource allocation. However, a critical gap emerged in Debt Management Knowledge, which was rated only as Moderate and displayed the highest variability among respondents. This finding corroborates the work of Artavanis and Karra (2020), who warn that while students may understand how to save, they often lack the sophisticated understanding of credit mechanisms, interest rates, and liability management. The lower score in this domain implies that current educational interventions may be heavily weighted toward asset management while inadvertently underemphasizing the risks and mechanics of borrowing, leaving students potentially vulnerable to future financial mismanagement.

4.2. Level of Spending Behavior

In terms of actual financial conduct, the Grade 12 ABM students exhibited a High level of responsible spending behavior. With a mean score indicating that students are generally careful and disciplined, these results resonate with Vital et al. (2025), who noted that senior high school students in private institutions often display positive spending habits driven by their academic environment and parental socialization. The data suggests that these students are not impulsive; rather, they have developed a degree of self-regulation that allows them to prioritize needs and manage their allowances effectively. However, a significant behavioral disconnect was identified: the practice of tracking daily expenses was rated as Low. This phenomenon highlights a gap between attitude and action; while students value financial discipline conceptually, they lack the technical habit of recording transactions. Hasanudin et al. (2022) note that without the reinforcement of monitoring tools (like ledgers or apps), high "financial maturity" can remain fragile, as unmonitored small expenses can easily undermine a mental budget.

4.3. The Relationship Between Literacy and Behavior

Further analysis confirmed that financial knowledge serves as a significant predictor for behavior, though this relationship is domain-specific. The study established a significant, moderate positive relationship between spending behavior and the domains of Budgeting and Saving/Investing Knowledge. This indicates that as students gain a deeper understanding of how to plan and save, their actual spending habits improve. This supports the "knowledge-behavior" link described by LeBaron et al. (2019), positing that cognitive competence in finance provides the necessary toolkit for making rational consumption choices. Conversely, a notable anomaly was observed regarding Debt Management, which showed no significant relationship with spending behavior. This disconnect can be interpreted through the lens of situational relevance. As O'Connell (2008) suggests, financial knowledge impacts behavior most effectively when it is immediately applicable. Since high school students primarily operate on cash allowances and rarely engage in formal borrowing, their theoretical knowledge of debt—whether high or moderate—remains "inert" and does not currently influence their daily spending decisions.

4.4. Implications for Financial Education

These findings underscore a specific need to recalibrate financial education strategies. While the current curriculum succeeds in fostering saving and budgeting skills, the moderate proficiency in debt management is a concern for the students' transition to adulthood. As Elliott and Beverly (2011) emphasize, comprehensive financial capability requires not just the ability to save, but the foresight to manage liabilities. Consequently, to promote a more holistic financial literacy, educational interventions must move beyond the "savings-centric" model to include rigorous, practical training on debt management, ensuring that students are as competent in handling credit as they are in managing assets.

5. Conclusion and Recommendations

5.1. Conclusion

The study concludes that Grade 12 ABM students possess a high level of financial literacy in budgeting and saving, which significantly correlates with and positively influences their responsible spending behavior. However, a distinct gap exists in debt management knowledge, which remains at a moderate level and shows no statistical relationship with their current financial habits. This suggests that while students are proficient in planning and resource allocation, their understanding of debt is less developed and currently detached from their daily financial decisions, highlighting a specific area where the curriculum and instruction require strengthening to ensure holistic financial capability.

5.1.1. Limitations of the Study

While this study offers valuable insights into the financial behavior of ABM students, it has limitations that temper its conclusions. First, the sample size was relatively small (N = 45) and limited to a single school, which may not be fully representative of the entire Grade 12 ABM population in the Philippines. Consequently, the generalizability of the findings is limited. Second, the cross-sectional design prohibits causal inference, meaning the study can describe relationships but not definitively prove that financial literacy causes specific spending behaviors. Finally, the reliance on self-reported data may reflect students' perceived rather than actual financial habits. Future research should employ larger, stratified samples across multiple schools to increase generalizability and include behavioral measures (such as spending records or simulated tasks) to validate these findings.

5.2. Recommendations to Improve Financial Literacy

Based on the findings and conclusions of the study, particularly the identified gap in debt management knowledge, the following recommendations are proposed to enhance the financial literacy and spending behavior of Grade 12 ABM students:

5.2.1. Integrate Practical Financial Education Activities

The school should incorporate applied financial learning experiences—such as personal budgeting exercises, stock market simulations, and case studies—into the ABM curriculum. Research indicates that experiential learning significantly improves students' ability to connect theory with practice, leading to better financial decision-making skills than traditional instruction alone (Pichop, 2025). These activities will allow students to apply

budgeting, saving, and investing concepts in realistic scenarios, thereby reinforcing their competencies.

5.2.2. Conduct Financial Literacy Seminars and Workshops

Regular financial literacy seminars should be conducted in collaboration with banks, financial experts, or local business professionals. These programs should emphasize responsible borrowing, the proper use of credit, and debt management strategies. Studies suggest that targeted financial management programs in educational institutions are positively correlated with responsible spending and saving habits among students (Halawa et al., 2022). Exposure to real-life financial scenarios through these experts can help students develop a deeper, practical understanding of managing money wisely.

5.2.3. Promote Savings and Investment Programs for Students

Schools may initiate or partner with financial institutions to create student savings programs or financial literacy clubs. Access to savings accounts and financial education at a young age is linked to improved financial capability and asset accumulation (Elliott & Beverly, 2011). These initiatives encourage students to cultivate the habit of saving early, plan for future financial goals, and gain basic exposure to investment opportunities that promote long-term financial independence.

5.2.4. Integrate Debt Management Lessons into Business-Related Subjects

Teachers handling ABM subjects—such as Organization and Management, Business Finance, or Principles of Marketing—should explicitly include lessons focused on credit use, interest rates, loan repayment, and financial responsibility. Artavanis and Karra (2020) found that students with lower financial literacy are significantly more likely to underestimate future loan payments and struggle with debt repayment. Integrating these topics into existing subjects ensures that students receive continuous reinforcement of debt management principles, addressing the specific weakness identified in this study.

5.2.5. Encourage Parental and Community Involvement

Schools should collaborate with parents and community organizations to promote financial literacy beyond the classroom. Parents are often the primary source of financial socialization for children; thus, encouraging them to involve their children in household budgeting and expense discussions can be highly effective. Overt financial education at home, such as discussing credit and debt, has been associated with healthier financial behaviors and lower debt accumulation in emerging adulthood (LeBaron et al., 2018).

5.2.6. Monitor and Evaluate Financial Literacy Programs

A regular assessment and evaluation system should be established to measure the effectiveness of financial literacy initiatives implemented in the school. Continuous evaluation allows educators to identify gaps in understanding and adjust instructional strategies accordingly, ensuring the programs remain relevant and effective in improving students' financial competencies (O'Connell, 2008).

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Impact of School Day Length on Academic Performance – A Global Synthesis

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Abstract

This global synthesis examines the impact of school day length on academic performance by systematically reviewing 40 high-quality studies spanning extended school days, four-day school weeks, and delayed start time interventions across diverse international contexts. Findings demonstrate that extending the school day, particularly from inadequate baseline levels of 4-5 hours to 7-8 hours, consistently improves academic outcomes, yielding effect sizes ranging from 0.05 to 0.22 standard deviations, with gains increasing over multiple years of exposure. Benefits are strongest for socioeconomically disadvantaged learners, students with limited home learning opportunities, and, in some cases, girls and students in autonomous school settings. Conversely, reductions in total instructional time associated with four-day school weeks lead to measurable declines in math and reading achievement, though districts maintaining high total weekly instructional hours mitigate or reverse these negative effects. Delayed school start times show small to moderate improvements in GPA, attendance, and engagement. Across interventions, implementation quality, particularly teacher autonomy and purposeful use of added time, emerges as a critical moderating factor. Overall, the evidence indicates that instructional time is a significant but context-dependent driver of academic performance: extending school days produces meaningful gains when baseline time is low, whereas reductions below adequate thresholds harm achievement. Effective scheduling reforms must therefore consider not only the quantity of school time but also how that time is structured, delivered, and equitably experienced by different student populations.

Keywords: school day length; academic performance; extended school day; instructional time; school time

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1. Introduction

The duration of the school day and its subsequent impact on student academic performance have long been subjects of extensive debate among policymakers, educators, and researchers (Redd et al., 2012). This complex relationship is particularly salient given the varied approaches school districts employ to optimize instructional time while managing budgetary constraints and extracurricular demands (Anderson & Walker, 2015). Numerous studies have explored the direct and indirect effects of extended instructional periods, with some indicating a positive correlation between increased time in core subjects and improved student outcomes (Yeşil Dağlı, 2018; Strazzeri et al., 2022). Specifically, additional literacy instruction has been shown to yield measurable gains in reading achievement, with some research indicating an improvement of 0.05 standard deviations in reading test scores for program assignments in the initial year (Figlio et al., 2018). Such findings underscore the importance of targeted instructional time, although the overall impact of increased time on student achievement often varies from small to medium in magnitude depending on the dosage, utilization, and specific context of the intervention (Kraft & Novicoff, 2024). While a growing body of evidence supports the notion that increased instructional time generally correlates with higher achievement, isolating the exogenous sources of variation in such studies remains challenging (Rivkin & Schiman, 2015). Therefore, this paper aims to synthesize existing causal research on the impact of school day length on academic performance, while also exploring the multifaceted obstacles schools encounter in translating total school time into effective active learning time (Kraft & Novicoff, 2024).

This systematic review synthesized evidence from 40 studies examining the relationship between school day length and academic performance across diverse geographic and educational contexts. The evidence reveals that the impact of school day length on achievement depends critically on whether time is being extended or reduced, the total instructional time maintained, and population socioeconomic context. Extended school day programs that increased daily instruction from approximately 4-4.5 hours to 7-8 hours showed consistent positive effects in developing countries, with impacts ranging from 0.1 standard deviations in Colombia (Hincapie, 2016) to 0.137 standard deviations after five years in Mexico (Padilla-Romo, 2022), and 0.22 standard deviations in Brazil (Rosa et al., 2020). Conversely, four-day school weeks that reduced weekly instructional time by 3-4 hours showed negative effects on achievement, with declines of 0.044-0.053 standard deviations in math and 0.033-0.038 standard deviations in reading in Oregon (Thompson, 2019). However, four-day schools maintaining high total instructional time showed positive effects (0.048-0.065 SD in math) (Thompson & Ward, 2021), indicating that total time rather than schedule format is the critical factor.

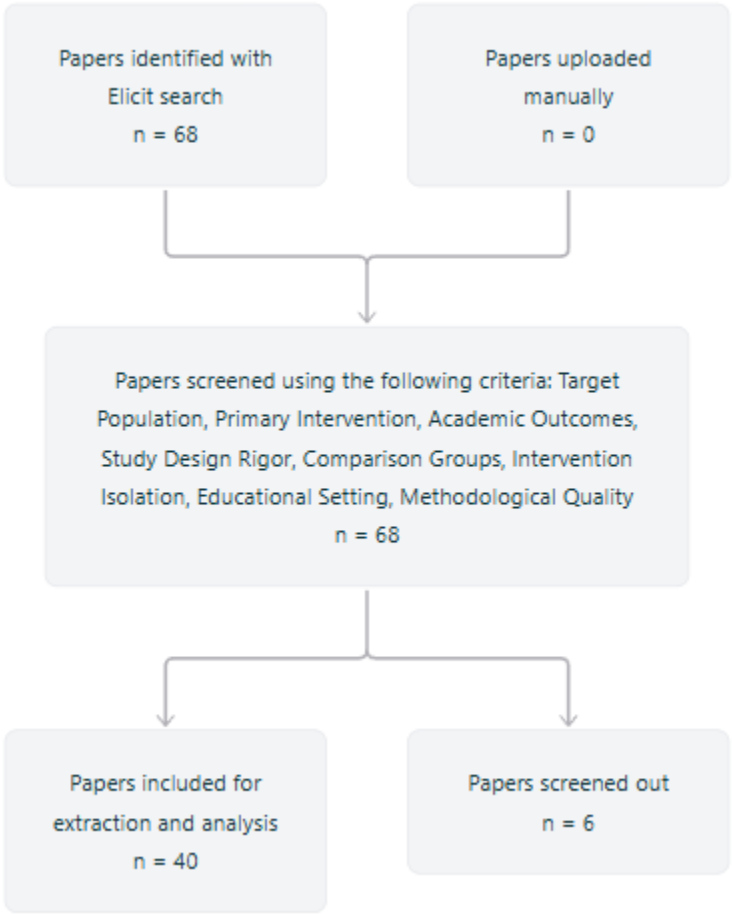
Effects varied systematically by student characteristics, with disadvantaged students showing substantially larger benefits from extended school time. In Colombia, the poorest schools experienced improvements of 0.2 standard deviations (Hincapie, 2016), while in Chile, effects were 5-6 times larger for students from disadvantaged backgrounds (Barrios Fernández & Bovini, 2018). Benefits accumulated over time, growing from 0.024 standard

deviations after one year to 0.137 standard deviations after five years in Mexico (Padilla-Romo, 2022), with similar patterns in Chile where effects increased from 0.05 to 0.14 standard deviations between one and two years of exposure (Berthelo et al., 2016). The evidence indicates that extending school time from inadequate baseline levels (below 5-6 hours daily) produces meaningful achievement gains, particularly for socioeconomically disadvantaged students, while reducing instructional time below adequate thresholds consistently harms achievement. Implementation quality matters substantially, with teacher autonomy over additional time yielding larger effects (0.15 SD) than prescribed programs in Denmark (Andersen et al., 2016).

2. Method

A total of 40 sources were analyzed from an initial pool of 68 retrieved studies. All papers were assessed using eight screening criteria, and each included study was subsequently reviewed across eight domains aligned with the research questions. Figure 1 provides an overview of the selection process.

Figure 1. *Paper Screening and Selection*


Papers identified with Elicit search n = 68
Papers uploaded manually n = 0
Papers screened using the following criteria: Target Population, Primary Intervention, Academic Outcomes, Study Design Rigor, Comparison Groups, Intervention Isolation, Educational Setting, Methodological Quality n = 68
Papers included for extraction and analysis n = 40
Papers screened out n = 6

2.1. Paper Search

A semantic search was conducted using the query "Impact of School Day Length on Academic Performance" through the Elicit academic search engine, which indexes over 138 million papers drawn from Semantic Scholar and OpenAlex. The search returned the 68 records most relevant to the query.

2.2. Screening Procedures

Studies were screened based on the following criteria:

Target Population: The study focused on students enrolled in formal K–12 institutions (elementary, middle, or high school).

Primary Intervention: The study examined school day length as the primary intervention.

Academic Outcomes: Academic performance outcomes were measured using standardized test scores, grades, achievement assessments, or other quantifiable indicators.

Study Design Rigor: The study employed an acceptable design—randomized controlled trial, quasi-experimental, cohort, cross-sectional, systematic review, or meta-analysis—and was not a case study, editorial, opinion piece, or conference abstract.

Comparison Groups: The study compared different school day lengths or compared modified school day schedules with standard or control conditions.

Intervention Isolation: The school day modification was not confounded by major simultaneous educational reforms (e.g., curriculum overhaul, large-scale teacher training, or technology interventions).

Educational Setting: The research was conducted in formal educational settings, excluding homeschooling, tutoring centers, or summer programs.

Methodological Quality: The study demonstrated adequate methodological rigor.

Screening decisions were based on a holistic evaluation of all criteria combined.

2.3. Data Extraction

A large language model (LLM) was used to extract structured data from each screened-in study. For each paper, the model was provided with standardized extraction instructions for the following domains:

School Day Definition: Definitions and measurements of school day length; duration comparisons; distinctions between instructional time and total time in school; comparison groups; variations across regions.

Academic Outcomes: Outcome measures, subject areas, assessment types, test names, grade levels, measurement time points, and distinctions between short-term and long-term effects.

Effect Magnitudes: Effect sizes (e.g., standard deviations, percentage points), statistical significance, confidence intervals, direction of effects, subject-specific effects, and longitudinal patterns.

Geographic Context: Country and region; education system type; socioeconomic and policy context; cultural or systemic factors affecting generalizability.

Time Use Quality: Descriptions of how additional school time was used, including instructional activities, enrichment, curriculum changes, resource quality, and implementation fidelity.

Study Population: Student grade levels, ages, sample sizes, demographics, school characteristics, subgroup analyses, and baseline performance indicators.

Moderating Factors: Student-, school-, and implementation-level moderators explaining variability in outcomes; subgroup-specific effects.

Study Design: Research design classification; causal identification methods; approaches to addressing selection bias; methodological strengths and limitations; treatment of endogenous school switching.

2.4. Reporting

Due to LLM processing constraints, the final synthesis includes the 40 studies with the highest screening scores out of the 62 studies that met inclusion criteria and for which data were successfully extracted.

3. Results and Discussion

3.1. Characteristics of Included Studies

The systematic review identified 40 studies examining the relationship between school day length and academic performance across diverse geographic and educational contexts. Studies varied considerably in their operational definitions of school day length, outcome measures, and methodological approaches. See Table 1 for further reference.

Table 1. *Included Studies*

Study	*Country/ Region*	*School Day Definition*	*Academic Outcomes*	*Study Design*	*Sample Size/ Population*
James et al. (2023)	USA (Minneapolis-St. Paul)	50-65 min start time delay	GPA, attendance, behavior referrals	Difference-in-differences	2,153 adolescents, grades 9-11
Wu (2018)	80 countries	Instructional time	Math and science achievement	Observational	900,000 8th graders
Hincapie (2016)	Colombia	Full day (7h) vs half day (4-5h)	Math and language test scores	Quasi-experimental, school fixed effects	5th and 9th graders
Plevier (2016)	USA (New Jersey)	Length of school day	NJ ASK Language Arts and Math, Grades 4-5	Cross-sectional observational	Grade 4 and 5 students
Sammarone (2014)	USA (New Jersey)	Length of school day	NJ ASK Language Arts and Math, Grades 6-8	Cross-sectional observational	600+ schools per grade
Padilla-Romo (2022)	Mexico	4.5h to 8h extension	Math and language test scores	Quasi-experimental, controls for school switching	Administrative panel data

Garganta et al. (2024)	Dominican Republic	4h to 8h extension (JEE program)	Math, language, sciences test scores	Event study approach	Secondary students, 2010-2019
Estrada et al. (2022)	Brazil (Fortaleza)	Full-time vs non-full-time	Graduation rates, math test scores	Instrumental variable design	Lower-secondary students
Alfonsi et al. (2020)	Not specified	8:00 AM vs 9:00 AM start	Math and science tests	Pre-post longitudinal	51 students
Cabrera-Hernández et al. (2023)	Mexico City	4.5h to 8h extension	High school admission test scores	Quasi-experimental	4.6M students (ENLACE), 2.4M (COMIPEMS)
Berthelon et al. (2016)	Chile	1.5-2h daily extension	2nd grade reading comprehension	Instrumental variables	99,211 students
Andersen et al. (2016)	Denmark	3h weekly increase (16 weeks)	Reading achievement	Randomized controlled trial	1,931 4th graders from 90 schools
Thompson & Ward (2021)	USA (12 states)	Four-day vs five-day week	Math and ELA achievement	Difference-in-differences	25,000+ observations, grades 3-8
Ovalle-Ramirez (2018)	Colombia	Double shift vs single shift	SABER11 quantitative reasoning, science, reading	Quasi-experimental, propensity score matching	Grade 11 students
Rosa et al. (2020)	Brazil (Pernambuco)	Full-day program	Math and language test scores	Triple differences, IV approach	High school students
Alfonsi et al. (2020)	Not specified	8:00 AM vs 9:00 AM start	Math and science tests	Pre-post longitudinal	51 students
Hewitt & Denny (2012)	USA (Colorado)	Four-day vs five-day week	CSAP reading, writing, math (grades 3-10)	Observational	62 school districts
Cabrera-Hernández et al. (2023)	Mexico City	4.5h to 8h extension	High school admission test, graduation rates	Quasi-experimental	4.6M (ENLACE), 2.4M (COMIPEMS)
Thompson (2021)	USA (Oregon)	Four-day vs five-day week (3-4h weekly reduction)	Math and reading, grades 3-8	Difference-in-differences, IV	2005-2019 data
Thompson & Ward (2021)	USA (Oregon)	Four-day vs five-day week	11th grade math achievement, graduation	Not specified	High school students
Thompson (2019)	USA (Oregon)	Four-day vs five-day week (3.6h weekly loss)	Math and reading test scores	Difference-in-differences	1.85M observations, 471,518 students
Biller et al. (2022)	Germany	8:00 AM vs 8:50 AM flexible start	Quarterly grades across disciplines	Longitudinal pre-post	63-157 students, grades 10-12
Thompson et al. (2023)	USA (Oregon)	Four-day week (7h 45m days) vs five-day (6h 54m days)	3rd grade math and ELA	Covariate-adjusted regression	95,221 students
Sanz, I., & Tena, J.D. (2021)	Spain (Madrid)	Two-week calendar reduction	Spanish and English exams	Difference-in-differences	Not specified

Alfonsi et al. (2023)	Italy	8:00 AM vs 9:40 AM start (COVID)	Global, humanistic, scientific performance	Observational, ANCOVA	232 (study 1), 39 (study 2)
Barrios Fernández & Bovini, G. (2018)	Chile	Half-day (4.88h) vs full-day (7.08h+)	4th grade reading and math	Quasi-experimental, IV	430,026 4th graders
Thompson (2017)	USA (Oregon)	Four-day vs five-day week	Math and reading	Difference-in-differences	Not specified
Sarmiento (2018)	Chile	Earthquake-induced reduction	Math and Spanish	Difference-in-differences	50%+ students from affected areas
DeLeon et al. (2022)	USA (Texas)	Year-round vs traditional calendar	5th grade reading and math STAAR	Quantitative quasi-experimental	12 schools (6 year-round, 6 traditional)
Tully (2017)	USA (New Jersey)	Length of instructional day	NJ ASK Language Arts and Math, Grades 6-8	Cross-sectional observational	200 schools per grade/subject
Ulhassan et al. (2022)	Pakistan (Sargodha)	Mid-day vs full-day (10h)	9th grade marks	Observational	382 students (163 mid-day, 219 full-day)
Lopez-Agudo & Marcenaro-Gutierrez (2020)	24 countries	Instruction time	Academic achievement	Student fixed-effects	4th grade students
Lewin et al. (2017)	Not specified	School start times (7:20 AM to 8:10 AM range)	Self-reported grades and homework	Cross-sectional observational	26,440 8th graders
Steinmann & Strietholt (2019)	Germany	Half-day vs all-day schools	Achievement in grades 5, 7, 9	Observational, latent growth models	National Educational Panel Study data
Tharp et al. (2016)	USA (Western state)	Four-day vs five-day week	Reading and math criterion-referenced tests	Quasi-experimental	70,000+ students annually, 2007-2013
Kwofie et al. (2018)	Ghana (Central Region)	3-year vs 4-year duration	WASSCE scores	Observational comparative	5,836 students from 3 schools
Vidigal, C. B. (2018)	Brazil	Half-day (4h) vs full-day (7h+)	Enrollment, dropout, promotion, repetition rates	Observational	Grades 1-12, 1999-2014
Matt et al. (2025)	USA (Montana)	Four-day vs five-day week (1080h requirement)	Student achievement (details not specified)	Observational	Census of Montana data, 2008-2023
Vidigal & Vidigal (2021)	Brazil	Mais Educação Extended School Day Program	Enrollment, dropout, promotion, repetition rates	Observational, school-level longitudinal	Grades 1-12
Wahlstrom & Owens (2017)	Not specified	School start times	Academic and health outcomes	Literature review	Review of multiple studies

As shown in Table 1, the studies represented three primary types of school time interventions: extended school days or full-time schooling programs (18 studies), four-day versus five-day school weeks (9 studies), and delayed school start times (6 studies). An additional 7 studies examined various other aspects of instructional time including calendar changes and cross-national comparisons. Studies were conducted across six continents, with the largest concentration in the United States (15 studies) and Latin America (11 studies).

3.2. Effects of Extended School Days

3.2.1. Short-term Effects (One Year or Less)

Studies examining the immediate impact of extending school days showed modest positive effects on academic achievement. In Mexico, students exposed to full-time schools for one year showed improvements of 0.024 standard deviations in math and 0.015 standard deviations in language (Padilla-Romo, 2022). Similarly, in Colombia, cohorts attending full school days scored approximately 0.1 standard deviations higher than those in half-day programs (Hincapie, 2016), with larger effects observed in mathematics (0.138 standard deviations for 9th grade) compared to language (0.110 standard deviations for 9th grade) (Hincapie, 2016).

In Chile, an instrumental variables analysis found that longer school schedules increased reading comprehension by 0.14 standard deviations (Berthelon et al., 2016). The study leveraged the gradual implementation of a reform that extended daily classroom time by 1.5 to 2 hours (Berthelon et al., 2016). In Denmark, a large-scale randomized controlled trial found that increasing instruction time by 3 hours per week for 16 weeks led to a 0.15 standard deviation improvement in reading achievement when teachers had high discretion over how to use the additional time (Andersen et al., 2016).

However, short-term effects were not uniformly positive. In the Dominican Republic, the Jornada Escolar Extendida program, which doubled the school day from 4 to 8 hours (Garganta et al., 2024), showed relatively low and unstable patterns of impact on test scores in the initial years (Garganta et al., 2024). In Germany, an observational study of half-day versus all-day schools found no differences in achievement growth throughout secondary school, despite initial achievement differences suggesting selection effects (Steinmann & Strietholt, 2019).

3.2.2. Long-term Effects (Multiple Years)

The benefits of extended school days appeared to accumulate over time in several contexts. In Mexico, effects grew substantially with exposure duration, reaching 0.137 standard deviations in math and 0.108 standard deviations in language after five years (Padilla-Romo, 2022). These long-term impacts translated into meaningful improvements in high-stakes high school admission test scores, with students exposed to full-time elementary schools scoring 0.048 standard deviations higher (Padilla-Romo, 2022). The effects increased linearly with exposure duration, from 0.002 standard deviations for one year to 0.095 standard deviations for six years of full-time schooling (Padilla-Romo, 2022).

In Chile, the benefits of longer school days accumulated over time, with effects increasing from 0.05 standard deviations after one year to 0.14 standard deviations after two years of exposure (Berthelon et al., 2016). The study noted that returns to time spent at school

were larger when learning opportunities at home were scarce (Berthelon et al., 2016), suggesting that extended school days may be particularly beneficial for disadvantaged students.

In Brazil, a full-day high school program increased math and language test scores by 0.22 and 0.19 standard deviations, respectively, over three years (Rosa et al., 2020). Another Brazilian study found that the Mais Educação Extended School Day Program had mixed long-term effects, reducing dropout rates for all grade levels but showing differential impacts on grade promotion across grade levels (Vidigal & Vidigal, 2021).

The Dominican Republic study examining five years of implementation found that the JEE program increased test scores in language and natural sciences by approximately 5% after five years (Garganta et al., 2024), though effects on mathematics remained non-significant (Garganta et al., 2024). In Colombia, double-shift schools (which provided more instructional time through split schedules) increased quantitative reasoning scores by 2% to 6% of a standard deviation (Ovalle-Ramirez, 2018).

3.2.3. Effects of Four-Day School Weeks

The four-day school week, typically implemented as a cost-saving measure, showed consistently negative impacts on student achievement across multiple U.S. states. In Oregon, the switch to a four-day school week (which reduced weekly instructional time by approximately 3.6 hours) (Thompson, 2019) decreased math scores by 0.044 to 0.053 standard deviations and reading scores by 0.033 to 0.038 standard deviations (Thompson, 2019). Students were also 1.9 percentage points less likely to score above the proficiency cutoff in math and 1.7 percentage points less likely in reading (Thompson, 2019).

These negative effects appeared immediately following the policy change and persisted over time. Initial drops of approximately 0.06 standard deviations in both subjects in the first year (Thompson, 2019) were followed by sustained negative impacts in subsequent years. Another Oregon study focusing on high school students found 11th grade math achievement was 0.09 standard deviations lower among four-day school week students (Thompson et al.,2023), with significant impacts driven by students in non-rural settings (Thompson et al.,2023). The study also found a greater number of students classified as chronically absent and reductions in on-time graduation (Thompson et al.,2023).

A comprehensive analysis across 12 U.S. states found that when examining four-day school weeks nationally, aggregate negative impacts on both math and ELA achievement masked important heterogeneity (Thompson & Ward, 2021). In Colorado, where 62 school districts operated four-day school weeks (Hewitt & Denny, 2012), mean test scores for five-day week schools exceeded those of four-day week schools in 11 of 12 test comparisons across grades 3 through 10 (Hewitt & Denny, 2012), though differences were generally small and only one comparison showed statistical significance (Hewitt & Denny, 2012).

In Montana, a comprehensive census study of student achievement data from 2008-2023 indicated that student achievement suffered in the four-day school week schedule (Matt et al., 2025). In a western state, four-day school week students' performance in reading fell from 87% to below 79% and in mathematics dropped from 70.5% to 57.2% over six years

(Tharp et al., 2016), suggesting that cultural adaptation to the four-day week may negatively affect student performance over time (Tharp et al., 2016).

3.2.4. Heterogeneous Effects by Student Characteristics

The benefits of extended school days varied systematically across student subgroups. Disadvantaged students consistently showed larger gains from extended school time. In Colombia, effects were largest among the poorest schools, with 9th grade students in the lowest socioeconomic stratum experiencing improvements of 0.2 standard deviations in mathematics (Hincapie, 2016). The study also found larger impacts in rural areas compared to urban settings (Hincapie, 2016).

In Chile, students from disadvantaged backgrounds benefited more from longer schedules, with effects 5-6 times larger (0.022-0.024 standard deviations) for reading scores among students from poorer households (Barrios Fernández & Bovini, 2018). This pattern suggests that returns to time spent at school are larger when learning opportunities at home are scarce (Barrios Fernández & Bovini, 2018). Charter schools, which had greater autonomy over administrative and pedagogical decisions, showed larger gains (0.055-0.066 standard deviations in reading per year) compared to public schools (0.018 standard deviations) (Barrios Fernández & Bovini, 2018).

Gender differences emerged in several studies. In Chile, girls experienced larger benefits than boys, with improvements of 0.19 standard deviations in reading comprehension compared to the overall effect of 0.14 standard deviations (Berthelon et al., 2016). In Mexico, female students experienced larger increases in high school admission test scores, with a difference of 2.1 percent of a standard deviation compared to males (Cabrera-Hernández et al., 2023), representing 16% of the gender gap in the high school admission exam (Cabrera-Hernández et al., 2023). However, the Dominican Republic study found complex gender patterns, with the JEE program favoring girls' learning in low-stakes evaluations but improving boys' relative scores in high-stakes exams (Garganta et al., 2024).

School type also moderated effects. Municipal (public) schools and urban schools in Chile showed larger benefits, with improvements of 0.19 and 0.15 standard deviations respectively (Berthelon et al., 2016). In Pakistan, while full-day students (attending 10 hours daily) showed significantly better academic achievement than mid-day students ($t=-5.64$, $p<0.05$) (Ulhassan et al., 2022), this came at a cost to their social and emotional well-being (Ulhassan et al., 2022), with students exhibiting problems including less peer interaction and emotional imbalance (Ulhassan et al., 2022).

3.2.5. Moderating Role of Total Time in School

A critical finding emerged when stratifying four-day school week impacts by total time in school. Districts with low time in school experienced statistically significant negative impacts on math achievement (0.037 to 0.045 standard deviations) and ELA achievement (0.039 to 0.054 standard deviations) (Thompson & Ward, 2021). However, districts with middle time in school showed no statistically significant impacts (Thompson & Ward, 2021), and those with high time in school actually showed increases in math achievement (0.048 to 0.065 standard deviations) with no significant effects on ELA (Thompson & Ward, 2021).

Using four-day school week adoption as an instrument for weekly time in school, researchers found that a one-hour increase in weekly time in school led to a 0.018 standard deviation increase in math achievement and a 0.006 standard deviation increase in reading achievement (Thompson, 2021). This instrumental variable analysis suggested that the primary mechanism driving achievement declines was the reduction in instructional time, which amounted to 216 minutes (3.6 hours) per week (Thompson, 2019) despite the lengthening of individual school days by approximately 38 minutes (Thompson, 2019).

3.2.6. Effects on Early Elementary Students

Early elementary students showed minimal negative impacts from four-day school weeks, with some subgroups showing no effects or even positive effects. A comprehensive Oregon study examining students from kindergarten entry through 3rd grade found overall minimal statistically significant differences in achievement scores (Thompson et al., 2023). However, above-median scorers on kindergarten assessments, male students, White students, non-ESL students, and non-economically disadvantaged students scored between 0.022 and 0.043 standard deviations lower in math and ELA compared to five-day school week students (Thompson et al., 2023).

Notably, ESL students showed 0.083 standard deviations higher reading scores (Thompson et al., 2023) and 0.064 to 0.12 standard deviations higher achievement in math and reading compared to non-ESL students (Thompson et al., 2023). The study suggested that this pattern might reflect floor effects, with struggling students potentially benefiting from remedial services or help sessions that four-day schools might offer on non-school weekdays (Thompson et al., 2023), or from a more constrained curriculum focusing on core skills (Thompson et al., 2023).

3.2.7. Effects of Delayed School Start Times

Studies examining delayed school start times consistently found positive associations with academic performance, though the magnitude varied. In Minneapolis-St. Paul, a 50 to 65-minute delay in school start times led to 0.07-0.17 higher GPA in policy change schools versus comparison schools (James et al., 2023). Effects were larger in the second year of follow-up than in the first year, with differences in absences and GPA emerging only in the second year (James et al., 2023). The study also found three fewer late arrivals, one fewer absence, and a 14% lower probability of behavior referrals (James et al., 2023).

In Italy, delayed school start times due to COVID-19 pandemic restrictions (from 8:00 AM to 9:40 AM) were associated with better academic performance in scientific subjects among first and second-year students ($p=0.026$) (Alfonsi et al., 2023) and improved global academic performance among last-year students ($p=0.041$) (Alfonsi et al., 2023). However, the study found no significant effect on school attendance (Alfonsi et al., 2023) and noted that circadian preference was a significant covariate, with early chronotypes exhibiting better academic performance ($r>0.369$, $p<0.025$) (Alfonsi et al., 2023).

A longitudinal study found that a one-hour delay in school start time was associated with an 8.9% increase (34 minutes) in total sleep duration across the academic year (Alfonsi et al., 2020), with wake-up times occurring 28 minutes later (7:23 AM vs 6:55 AM, $F1,48=11.81$, $p=0.001$) (Alfonsi et al., 2020). These sleep changes paralleled significant differences in

sustained attention, with late-start students (Alfonsi et al., 2020) outperforming early-start students. Notably, sleep changes were limited to school days (Alfonsi et al., 2020).

However, a German study examining a flexible school start system (allowing daily choice between 8:00 AM or 8:50 AM start) found no meaningful grade improvements despite observed sleep benefits (Biller et al., 2022). The study noted that while overall grade point average increased slightly from 58.2% to 59.6% ($p=0.033$, $dz=0.173$) (Biller et al., 2022), there was no systematic relationship between the flexible system and academic performance ($p=0.815$) (Biller et al., 2022). The authors concluded that at the "dose" received (intermittent sleep benefits), improvements did not translate into detectable grade changes (Biller et al., 2022), highlighting that grades may be suboptimal measures for evaluating timetabling interventions (Biller et al., 2022).

A large cross-sectional study of 26,440 eighth graders found that earlier school start times were associated with decreased sleep duration (Lewin et al., 2017), which in turn was linked to poorer academic performance (Lewin et al., 2017). The study highlighted disparities among race and gender groups in the relationship between school start time, sleep, and achievement (Lewin et al., 2017).

3.2.8. Effects of Instructional Time and School Calendar Changes

Several studies examined the relationship between instructional time and achievement without necessarily changing school day length. A natural experiment in Chile, where an earthquake reduced potential time at school by up to two months for over 50% of students (Sarmiento, 2018), found a negative and significant effect on mathematics performance but no significant effect on Spanish (Sarmiento, 2018). The effect was described as modest even for students who lost up to two months of schooling (Sarmiento, 2018).

In Spain's Madrid region, an unexpected regulatory change that reduced the school calendar of non-fee-paying schools by two weeks during the 2017/2018 school year (Sanz & Tena, 2021) contributed to significant deterioration in academic performance, particularly in Spanish and English (Sanz & Tena, 2021). The disruption affected students in the upper quartile of the distribution more than others (Sanz & Tena, 2021), leading to a reduction in the gap across non-fee-paying schools and an increase in the gap between non-fee-paying and fee-paying schools (Sanz & Tena, 2021).

In Texas, a comparison of year-round versus traditional calendar schools for fifth-grade students found no statistically significant differences in reading and mathematics performance across three years (2016-2017, 2017-2018, 2018-2019) (DeLeon et al., 2022). The schools had similar demographics including number of students, percent of economically disadvantaged, percent of emergent language learners, mobility rate, and percent of special education population (DeLeon et al., 2022).

Three cross-sectional studies in New Jersey examining the length of the instructional day found minimal or no relationship with achievement. For grades 4 and 5, the length of school day was not a statistically significant predictor of achievement on the NJ ASK (Plevier, 2016). For grades 6, 7, and 8, while school day length was statistically significant in all six models, the R-squared contribution was consistently small, ranging from 0.2% to 1.2% (Sammarone, 2014). Another New Jersey study found no statistically significant relationship

between the length of the instructional day and the percentage of students scoring proficient on the NJ ASK for grades 6, 7, and 8 (Tully, 2017).

A comparative study across 24 countries using student fixed-effects to exploit within-student, between-subject variability found that instruction time did not appear to be positively associated with students' academic performance for any of the countries under analysis, even when students remained engaged with the lesson during instruction time (Lopez-Agudo & Marcenaro-Gutierrez, 2020).

An international analysis of 80 countries using TIMSS data found that the positive effects of instructional time on student achievement were driven largely by the length of the school day rather than the length of the school year, with diminishing marginal returns to the former (Wu, 2018). Socioeconomically underprivileged students were most likely to realize gains from a longer school day (Wu, 2018), and the study revealed spillover effects from time spent in non-tested subjects that were especially meaningful for underprivileged students (Wu, 2018).

3.3. Synthesis of Findings

The literature reveals substantial heterogeneity in the effects of school day length on academic performance, with seemingly contradictory findings across contexts. Rather than indicating that "results are inconclusive," this variation can be explained through four key dimensions: the nature of the time intervention, total instructional time maintained, population context, and implementation quality.

3.3.1. Time Intervention Context: Extension Versus Reduction

The direction of effects depends critically on whether school time is being extended or reduced. Studies examining school day extensions from half-day to full-day schedules consistently show positive effects in developing contexts—Colombia (0.1 SD increase) (Hincapie, 2016), Mexico (up to 0.137 SD after five years) (Padilla-Romo, 2022), Chile (0.14 SD) (Berthelon et al., 2016), and Brazil (0.22 SD in math) (Rosa et al., 2020). These programs typically doubled instructional time from approximately 4-4.5 hours to 7-8 hours daily (Hincapie, 2016).

In contrast, studies examining time reductions through four-day school weeks consistently show negative effects when total instructional time decreases. Oregon studies documented declines of 0.044-0.053 SD in math and 0.033-0.038 SD in reading (Thompson, 2019), driven by weekly instructional time losses of 3-4 hours (Thompson, 2021). Montana and Colorado showed similar patterns (Matt et al., 2025). The Chilean earthquake study, which reduced schooling by up to two months, found negative effects on mathematics (Sarmiento, 2018), further supporting the importance of maintaining adequate instructional time.

However, this pattern is disrupted when four-day schools maintain sufficient total time. The national U.S. analysis stratified by time in school revealed that districts with high total time showed positive math effects (0.048-0.065 SD) (Thompson & Ward, 2021) despite the four-day format, while only low-time districts showed negative impacts (Thompson & Ward, 2021). This suggests that the four-day week per se is not harmful—rather, the critical factor is whether total instructional time remains adequate.

3.3.2. Population and Socioeconomic Context

The magnitude of effects varies systematically with student socioeconomic status and baseline learning opportunities. Disadvantaged students consistently show larger benefits from extended school time. In Colombia, the poorest schools showed effects of 0.2 SD in 9th grade math (Hincapie, 2016). In Chile, effects were 5-6 times larger for students from disadvantaged backgrounds (Barrios Fernández & Bovini, 2018). The international TIMSS analysis found that socioeconomically underprivileged students were most likely to realize gains from longer school days (Wu, 2018).

This pattern can be explained mechanistically: extended school time provides the greatest benefit when it substitutes for limited learning opportunities at home. Students from higher-SES backgrounds may have access to books, tutoring, educational trips, and parental support during non-school hours that help maintain learning even when school time is reduced. Conversely, disadvantaged students may depend more heavily on school as their primary source of structured learning time (Berthelon et al., 2016).

The cross-national finding that instruction time shows no positive association with achievement in developed countries with student fixed-effects (Lopez-Agudo & Marcenaro-Gutierrez, 2020) does not contradict the positive findings from developing countries. Rather, it reflects that in well-resourced systems where all students receive adequate instructional time (typically 5-6 hours daily in OECD countries), marginal increases may show diminishing returns. The Chilean and Mexican programs extended time from 4-4.5 hours to 7-8 hours—moving from inadequate to adequate levels—whereas developed country studies often examine variations within the adequate range.

3.3.3. Implementation Quality and Autonomy

The Danish randomized controlled trial provides crucial evidence on implementation factors. Schools randomly assigned to increase instruction time by 3 hours weekly with high teacher discretion showed 0.15 SD gains (Andersen et al., 2016), while those assigned to follow a detailed expert-developed teaching program showed small and insignificant effects (Andersen et al., 2016). This suggests that additional time is most effective when educators have autonomy to tailor instruction to student needs rather than following prescribed curricula.

Similarly, Chilean charter schools, which had greater autonomy over pedagogical decisions, showed gains of 0.055-0.066 SD per year in reading compared to 0.018 SD in public schools with less flexibility (Barrios Fernández & Bovini, 2018). The Brazilian study noting that implementation varied by number of days of extended hours found that more consistent implementation was highly associated with greater effects (Rosa et al., 2020).

The German all-day school study finding no achievement differences despite initial selection effects (Steinmann & Strietholt, 2019) likely reflects that simply extending the school day without purposeful use of additional time yields minimal benefits. The New Jersey studies showing minimal effects of longer school days (Plevier, 2016) may reflect similar issues—if additional time is not strategically used for instruction, effects will be negligible.

3.3.4. Age, Subject, and Outcome Timing

Effects vary by student age and subject area. In Colombia, impacts were larger for 9th grade (0.138 SD in math) than 5th grade students (0.082 SD) (Hincapie, 2016), and larger for math than language at both grade levels (Hincapie, 2016). The Dominican Republic study similarly found differential effects by subject, with language and natural sciences showing 5% increases after five years but mathematics showing no significant impact (Hincapie, 2016).

Four-day school weeks showed minimal negative impacts on early elementary students (Thompson et al., 2023), with ESL students even showing positive effects (0.083 SD higher reading) (Thompson et al., 2023). This may reflect that younger students benefit from remedial services offered on off-days or that floor effects mask true impacts for struggling learners (Thompson et al., 2023). In contrast, high school students showed larger negative effects (0.09 SD in 11th grade math) (Thompson et al., 2021), possibly because accumulated time losses over multiple years compound, or because older students have less parental supervision on off-days.

Timing of outcome measurement matters substantially. Mexican studies showed that effects accumulate over time, growing from 0.024 SD after one year (Padilla-Romo, 2022) to 0.137 SD after five years (Padilla-Romo, 2022), with linear increases from 0.002 SD for one year to 0.095 SD for six years of exposure (Cabrera-Hernández et al., 2023). Chilean studies similarly found benefits increasing from 0.05 SD after one year to 0.14 SD after two years (Berthelon et al., 2016). The Minneapolis school start time study found that effects were larger in the second year of follow-up than the first year, with differences in absences and GPA emerging only in the second year (James et al., 2023). This suggests that cross-sectional or short-term studies may substantially underestimate true effects.

3.3.5. School Start Times Versus Total Time

The school start time literature shows consistently positive associations with academic performance (James et al., 2023), but these effects operate through sleep and attention mechanisms rather than total instructional time. The Minneapolis study documented not only GPA improvements but also reduced late arrivals (3 fewer), fewer absences (1 fewer), and lower behavior referrals (14% reduction) (James et al., 2023). The Italian study found sleep duration increased by 34 minutes (8.9%) with later start times, improving sustained attention (Alfonsi et al., 2020).

However, the German flexible start time study finding no grade improvements despite sleep benefits (Biller et al., 2022) highlights an important distinction. Intermittent sleep improvements (from occasional later starts) may not translate to measurable academic effects at the "dose" received (Biller et al., 2022), whereas consistent schedule changes show clearer benefits. This explains apparent contradictions: school start time effects are real but require consistent implementation and may not manifest in all outcome measures (particularly grades versus standardized tests).

4. Summary and Conclusion

The synthesis reveals that school day length affects achievement through multiple pathways: total instructional time, quality of time use, sleep and attention, and substitution for home learning opportunities. Positive effects emerge when time is extended from inadequate baseline levels (particularly for disadvantaged students), when additional time is used with pedagogical autonomy, and when programs are implemented consistently over multiple years. Negative effects emerge when instructional time is reduced below adequate thresholds without compensating strategies. The critical threshold appears to be maintaining approximately 5-6 hours of daily instruction, with effects larger when extending from below this threshold than when making marginal adjustments above it.

This global synthesis demonstrates that school day length has a meaningful but context-dependent impact on academic performance. Across 40 rigorously screened studies, the review reveals a consistent pattern: the effectiveness of instructional time depends less on the structure of the schedule and more on the total amount of high-quality learning time provided, how it is used, and which students are being served. Extending school day length improves academic performance when it increases total instructional time from inadequate baseline levels, with effects being largest for disadvantaged students and accumulating over multiple years, while reducing instructional time below adequate thresholds consistently harms achievement. These findings underscore the importance of instructional equity and the potential of extended school time to narrow achievement gaps.

Extended school day programs – especially in contexts where baseline instructional time is low – produce small to moderate gains that strengthen over multiple years. These effects are strongest for socioeconomically disadvantaged learners, girls in certain contexts, and students with limited learning opportunities at home. Conversely, reductions in instructional time, particularly through four-day school week models that lower total weekly hours, reliably depress academic outcomes. These negative effects were observed across multiple U.S. states and grade levels, with the greatest declines occurring in math. However, districts that compressed the four-day schedule while maintaining high total instructional time avoided these detrimental outcomes and, in some cases, demonstrated small academic gains – reinforcing the centrality of total time in school rather than schedule format alone.

Delayed school start times offer another credible pathway for enhancing academic performance. Shifting schedules later in the morning consistently improved grades, attendance, and behavioral indicators, with effects strengthening over time. Although these benefits were generally modest, the alignment of school schedules with adolescent sleep patterns demonstrates how non-instructional adjustments can indirectly support learning.

Across all interventions, implementation quality emerged as a decisive factor. Teacher autonomy in allocating additional time, coherent instructional planning, and attention to student wellbeing shaped the extent to which extended schedules translated into real learning gains. Importantly, some studies documented trade-offs between academic improvement and student social-emotional health when school days became excessively long, emphasizing the need for balanced, student-centered time policies.

Taken together, the evidence indicates that increasing instructional time yields meaningful academic benefits when applied strategically – particularly in low-resource environments and when accompanied by high-quality teaching. In contrast, reducing instructional time below adequate thresholds consistently harms achievement, especially for vulnerable populations. Policymakers and school leaders should therefore prioritize maintaining sufficient total instructional time, ensure that added hours are used effectively, and consider developmental and wellbeing needs when altering daily schedules. As education systems continue to address post-pandemic learning recovery, optimizing school time remains a powerful but nuanced lever for improving academic outcomes worldwide.

Role of Artificial Intelligence in the Study

Artificial intelligence (AI) was used to support data processing and synthesis in this study. A large language model (LLM) assisted in the extraction and organization of predefined data elements from screened studies, including information on school day definitions, academic outcomes, effect magnitudes, geographic context, time-use patterns, study populations, moderating factors, and methodological features. AI was also used to perform semantic search during the initial literature retrieval phase. All outputs generated by the AI were manually reviewed, validated, and cross-checked by the researcher to ensure accuracy, reliability, and alignment with the study's analytical framework. The interpretation of findings, methodological decisions, and all final conclusions were made exclusively by the author.

Conflict of Interest Statement

The author declares no conflicts of interest related to the conduct, analysis, or publication of this study.

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Leadership for Equity in Digital Transformation: Exploring how Leaders Ensure Inclusive Access to Educational Technologies in Underserved Communities

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Abstract

Digital technologies possess substantial potential to democratize educational access; however, persistent inequities related to infrastructure, skills, and meaningful engagement continue to disproportionately affect underserved communities globally. This study investigates leadership strategies and policy instruments that ensure equitable access to educational technologies in underserved contexts through a systematic document analysis of 47 peer-reviewed articles, policy reports, and case studies. Results indicate that equity-oriented leadership models – particularly transformative, distributed, and community-centered approaches – are central to promoting digital inclusion. Effective leaders demonstrated a capacity to integrate infrastructure investment with pedagogical innovation, culturally responsive teaching, and adaptive problem-solving. They engaged communities as partners rather than passive beneficiaries, grounded decisions in justice-oriented frameworks, and deliberately cultivated institutional accountability. Importantly, the findings show that single-axis interventions are insufficient; intersectional approaches addressing compound marginalization, including gender, geography, and disability, produce more sustainable outcomes. This research contributes to scholarship on educational technology and leadership by identifying empirically grounded strategies, articulating critical implementation gaps, and offering actionable guidance for policymakers, institutional leaders, researchers, and community stakeholders committed to advancing global digital equity.

Keywords: digital equity, educational leadership, transformative leadership, underserved communities, technology access, inclusive education

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1. Introduction

Leadership for equity in digital transformation has become a critical focus in the contemporary educational landscape as rapid technological advancement continues to reshape how learning is accessed, delivered, and experienced worldwide. Digital technologies have the potential to enhance inclusion, expand educational opportunities, and create more flexible and personalized learning environments. However, despite this promise, deep and persistent inequalities remain, particularly in underserved communities where infrastructure limitations, socioeconomic constraints, and insufficient digital literacy hinder meaningful participation in digital learning environments. These disparities risk reinforcing and widening existing educational gaps if they are not addressed through intentional, equity-centered leadership.

Educational leaders play a pivotal and multifaceted role in ensuring that digital transformation serves all learners, not only those in privileged or well-resourced settings. Their responsibilities extend beyond merely providing access to devices and internet connectivity; they must foster inclusive learning environments, strengthen teachers' digital and pedagogical capacities, engage families and communities, and advocate for policies that embed equity at the core of digital initiatives. Effective leaders recognize that the digital divide is not only a technological issue but also a social, cultural, and political one. As such, leadership in this context requires the ability to design context-sensitive strategies that respond to the lived realities of marginalized learners while mobilizing stakeholders toward collective action (Aini, 2025).

Globally, a growing body of research and policy guidance underscores the importance of holistic approaches to digital transformation in education. International organizations such as UNESCO and the OECD emphasize that digital transformation involves more than the adoption of new tools; it represents a systemic restructuring of teaching, learning, governance, and resource allocation. According to the OECD's Digital Education Outlook (2023), many countries remain in a phase of digital transition rather than full transformation, as disparities in access, connectivity, and capacity continue to undermine equity. Similarly, UNESCO highlights that millions of learners, particularly in rural areas and marginalized communities, remain disconnected from even the most basic forms of digital access, significantly limiting technology's potential to function as an equalizing force.

Current literature also points to the fact that leadership for digital equity must extend into ethical and justice-oriented realms. Transformative leadership scholarship emphasizes that leaders must act as advocates for social justice, ensuring that marginalized students feel affirmed, respected, and academically challenged (Shields & Hesbol, 2019). These findings suggest that leadership in digital transformation is not merely managerial or technical, but deeply moral and political, requiring leaders to challenge inequitable structures, redistribute opportunities, and create inclusive cultures. Collaborative partnerships, community engagement, sustainable policy alignment, and culturally responsive approaches have emerged as essential components of leadership for equitable

digital transformation in underserved contexts (Liu et al., 2024; Khalid et al., 2021; Mauti & Nyambane, 2025).

Despite these contributions, significant gaps and limitations remain in the existing body of knowledge. First, much of the current literature is concentrated in high-income or urban contexts, leaving limited documentation of how leaders in underserved and marginalized communities navigate the complex challenges of digital inequity. Second, while policy documents and global frameworks emphasize leadership as a critical pillar, there is insufficient empirical analysis of how these leadership directives are interpreted, adapted, and enacted at institutional and grassroots levels. Third, existing studies often focus on access to technology as a standalone variable, rather than examining the interplay between leadership practices, governance structures, capacity-building mechanisms, and community engagement in promoting meaningful and equitable use of digital tools.

Furthermore, there remains a lack of integrative models that synthesize leadership strategies, policy frameworks, and contextual realities into a coherent conceptual understanding of equity-centered digital transformation. Many initiatives highlight infrastructure development or teacher training independently, but few studies explore how leaders orchestrate these elements in tandem while addressing emotional, cultural, and social dimensions of exclusion. As a result, unanswered questions persist regarding which leadership strategies are most effective in mitigating digital inequities, how leaders overcome systemic barriers in low-resource environments, and what recurring patterns or gaps exist within institutional, organizational, and policy-level documents.

In response to these limitations, this study examines how educational leaders across the world advance inclusive digital transformation in underserved communities. Through a systematic document analysis of policy, institutional, and organizational sources, it investigates leadership strategies, governance mechanisms, partnership models, and capacity-building approaches that support equitable access to educational technologies. By identifying recurring themes, successful practices, and critical gaps, the study aims to develop a conceptual model of equity-centered digital leadership. In doing so, it contributes not only to existing theory on transformative and socially just leadership but also provides actionable insights for policy makers, school leaders, and development organizations seeking to ensure that digital transformation becomes a vehicle for empowerment rather than exclusion.

2. Literature Review

Digital transformation has emerged as a critical imperative for higher education institutions globally. Yet this transformation presents profound inequities, particularly in technology-marginalized contexts and underserved communities. Leadership plays a pivotal role in ensuring that digital innovation advances equity, justice, and sustainability rather than perpetuating existing educational disparities Mauti and Nyambane (2025). This literature review synthesizes current knowledge on how ethical, inclusive, and transformative leadership approaches can guide equitable digital transitions in educational settings, particularly for marginalized populations.

The rapid digitalization of higher education has created significant opportunities for innovation while simultaneously exposing complex challenges. In technology-marginalized contexts such as those in the Global South, unequal access to digital infrastructure, limited institutional capacity, and concerns over data privacy risk deepening educational inequities Mauti and Nyambane (2025). The digital divide characterized as disparities in access to and use of technology presents a fundamental barrier to equitable education, particularly affecting students in rural areas, low-income households, and marginalized communities Assefa et al. (2024).

Research from South Africa's e-education context demonstrates that digital inequity issues include inequitable access to technology, exclusionary educational practices, and an unjust social context for technology adoption in schools Mulaudzi (2024). Similarly, in Pakistan's digital landscape, marginalized students face substantial barriers to accessing digital learning tools, with rural students experiencing the most significant obstacles (Qi & Mohammad, 2024). These disparities highlight that digital transformation cannot be treated as purely technical but must be understood as an ethical and political undertaking requiring justice-oriented leadership.

Effective leadership is central to bridging digital divides and advancing educational equity. Transformative leadership grounded in ethical frameworks, visionary thinking, and compassionate approaches offers a compelling model for digital transformation in higher education. Ethical leaders, when directing digital transformation, can foster inclusive governance, protect human dignity, and enhance participatory decision-making among diverse stakeholders. The multidimensional ethical leadership model proposed by Mauti and Nyambane (2025) emphasizes: visionary approaches that align digital innovation with the public good; inclusive practices that center the voices of marginalized communities and compassionate engagement that recognizes the human dimensions of technological change.

Additionally, transformational leadership styles combined with servant and inclusive leadership models have demonstrated effectiveness in fostering innovation and managing organizational change during digital transitions. Leadership strategies must address both human and technical aspects of change, including professional development, stakeholder collaboration, and resource allocation tailored to context-specific challenges (Du et al., 2025).

Leaders must prioritize equitable access to digital infrastructure and resources while recognizing that access alone is insufficient. Complementary investments in technical support, user-friendly interfaces, and culturally responsive digital content are essential. Strategic planning must account for intersectional barriers faced by students with disabilities, linguistic minorities, and economically disadvantaged learners (McClain & Yates 2023).

Digital equity initiatives cannot adopt one-size-fits-all approaches. The literature emphasizes the importance of context-sensitive, locally-responsive strategies. In Sindh, Pakistan, for example, digital transformation challenges include infrastructural inequity, low teacher digital readiness, lack of localized digital content, and pronounced urban-rural and

gender digital divides (Waqar et al., 2024). Effective leadership requires infrastructure investment in rural and remote areas to ensure reliable internet connectivity and access to devices; localized digital content that reflects cultural contexts and is available in local languages; gender-sensitive strategies addressing particular barriers faced by girls in accessing and utilizing educational technologies and community-driven digital learning hubs that provide accessible spaces for technology engagement.

Similarly, in Cambodia, digital transformation requires coherent, socially responsive strategies that address Cambodia's unique socio-economic factors while maintaining a balance between technological integration and essential human elements in learning environments (Flores & Mean, 2025).

Despite growing recognition of the importance of digital equity, significant challenges persist. These includes insufficient funding for digital infrastructure, particularly in developing regions; teacher unpreparedness due to inadequate professional development and support; organizational resistance to change, particularly from middle management; persistent disparities in access based on socioeconomic status, geography, and demographic characteristics and algorithmic bias and data privacy concerns that disproportionately affect vulnerable populations.

Furthermore, digital transformation initiatives developed without genuine community engagement risk replicating existing power imbalances and exclusions (Foley et al, 2022). Leadership must actively work against these barriers through intentional, reflexive practices that center equity throughout all stages of digital transformation.

Leadership for digital equity in underserved communities requires far more than technological implementation. It demands ethical, transformative, and inclusive approaches grounded in justice-oriented frameworks that center human dignity, community agency, and equitable outcomes. As digital transformation accelerates globally, educational leaders must actively work to ensure that technological innovation strengthens rather than undermines equity, that access is coupled with meaningful engagement, and that marginalized communities participate as agents not merely recipients of change.

The evidence reveals that when leadership is characterized by vision, inclusivity, compassion, and genuine commitment to equity, digital transformation can foster inclusive governance and meaningful educational advancement. However, this requires sustained investment, intentional governance reforms, and willingness to address systemic inequities alongside technological change.

3. Methodology

In the context of this study on Leadership for Equity in Digital Transformation: A Document Analysis of Inclusive Access to Educational Technologies in Underserved Communities, the research environment is primarily situated in the digital and online domain. Since the study draws exclusively from publicly available online materials – such as policy documents, government reports, institutional guidelines, research articles, organizational frameworks, and digital equity initiatives the internet itself becomes the environment where data is located, accessed, and analyzed.

This study was situated within the broader global landscape of digital transformation in education, specifically focusing on institutional environments that influence equity-oriented leadership in underserved communities. The research environment encompassed a multi-level governance system involving international organizations, national education ministries, and development agencies, all of which play significant roles in shaping digital inclusion agendas.

Finally, the research also considered the operational environment of development partners and non-governmental organizations, which are often responsible for implementing digital education programs in marginalized and resource-constrained contexts. These organizations provide evaluation reports and project documentation that highlight practical leadership approaches and challenges in underserved communities.

3.1. Research Design

This study employs a qualitative multiple-case study design supported by document analysis, aiming to explore the complex realities of leadership for digital equity within diverse educational contexts. The multiple-case design (Yin, 2018) enables a comparative understanding of how different leaders interpret and act upon challenges related to equitable access to technology in underserved schools or communities. The methodology is grounded in the Transformative Leadership Theory, Distributed Leadership Theory, and the Digital Equity Framework, which together guide the investigation into how leaders' values, actions, and collaborations contribute to inclusive digital transformation.

Qualitative inquiry is most appropriate for this study because it allows an in-depth exploration of leaders' perspectives, decision-making processes, and community partnerships that cannot be captured through quantitative measures alone. By combining case studies with document analysis, the research situates leadership practices within broader policy, institutional, and cultural contexts, ensuring both micro- and macro-level insights.

3.2. Research Tools

The research employs a range of analytical tools to ensure systematic and accurate interpretation of data. These include the Document Analysis Matrix, coding sheets (manual or software-based), and a thematic framework aligned with key theoretical constructs using NVivo a qualitative content analysis software to organize codes, annotate passages, and retrieve evidence linked to research questions.to manage data efficiently and visualize emerging themes.

3.3. Sources of Data and Sampling

The study adopted document analysis following Bowen (2009), a structured process of reviewing and evaluating texts to extract meaning, deepen understanding, and build empirical knowledge. Documents were purposively sampled to represent a diversity of sources: national and regional policy texts, international organization reports, academic review articles, and non-profit/think-tank white papers published in the last 3 years. Selection prioritized documents that explicitly addressed digital equity, educational technology access, or leadership approaches in education.

The study utilized a comprehensive set of documentary data consisting of official publications, policy papers, strategic frameworks, and evaluation reports relevant to digital transformation, leadership, and educational equity. These documents were purposively selected as they represent authoritative sources outlining how leaders conceptualize, implement, and monitor equitable digital transformation initiatives. The data corpus included global policy frameworks such as digital competency standards, international EdTech roadmaps, and equity-focused policy briefs published by UNESCO, UNICEF, OECD, ITU, and the World Bank EdTech Office, all of which articulate international expectations regarding leadership roles, digital inclusion benchmarks, and equity-driven implementation strategies. In addition, national digital transformation strategies—including ICT in Education Master Plans, National Digital Learning Frameworks, Digital Transformation Blueprints, and Inclusive Education and EdTech Policies—were drawn primarily from low- and middle-income countries where underserved communities face the greatest barriers to technological access. The study also analyzed donor and development agency reports, notably evaluation studies and program reviews from the World Bank, Asian Development Bank, USAID, the Gates Foundation, and other international NGOs, which provided empirical insights into the implementation and assessment of digital transformation initiatives in marginalized regions. To capture community-level realities and grassroots perspectives, civil society and NGO publications such as those from BRAC, Save the Children, and Plan International were also incorporated.

3.4. Data Analysis

Data are analyzed using thematic analysis, following the steps outlined by Braun and Clarke (2006). This includes familiarization with the data, generating initial codes, identifying and reviewing themes, and synthesizing interpretations. Themes are categorized under major concepts such as leadership, access and equity, community collaboration, and policy sustainability. The analysis culminates in a narrative synthesis that integrates theoretical perspectives with empirical insights. Framework-based analysis mapping findings to leadership constructs such as: policy leadership, resource mobilization, inclusive design and access, community engagement, capacity building, data governance, and accountability mechanisms.

3.5. Research Procedure

The data collection procedures involved several systematic steps to ensure the comprehensive retrieval and organization of relevant documentary sources. First, documents were identified through official institutional repositories, including UNESCO, UNICEF, and World Bank websites, as well as government portals hosting national digital education strategies, digital learning program evaluation databases, and scholarly platforms such as ERIC and the OECD Library. Once identified, the documents were downloaded in PDF, DOCX, or HTML formats, converted when necessary, and imported into NVivo for qualitative analysis. Each document was assigned metadata indicating the organization of origin, year of publication, document type, and regional focus to facilitate systematic classification. The NVivo coding process involved the development of a structured coding schema comprising eight parent nodes and thirty-eight sub-nodes that

reflected key leadership domains such as Vision and Policy, Governance, Equity Monitoring, Capacity Building, Community Partnerships, and Sustainability. The researcher applied thematic coding to categorize relevant segments of text and employed NVivo's analytical tools—including word frequency queries, matrix coding, cluster analysis, and co-occurrence heatmaps—to explore thematic relationships and coding patterns across the corpus. To ensure rigor, validation and triangulation were conducted by comparing patterns across global, national, and donor-generated documents, cross-checking coding consistency, and using matrix queries to confirm the alignment between identified leadership themes and equity directives.

Although this study relies primarily on publicly available documents, ethical standards are rigorously observed. All sources are cited appropriately to respect intellectual property rights, and no document is altered in any way. Confidential materials, if accessed, will be treated with discretion and anonymity.

4. Results and Discussion

4.1. Coding Frequency of Digital Equity Leadership Themes

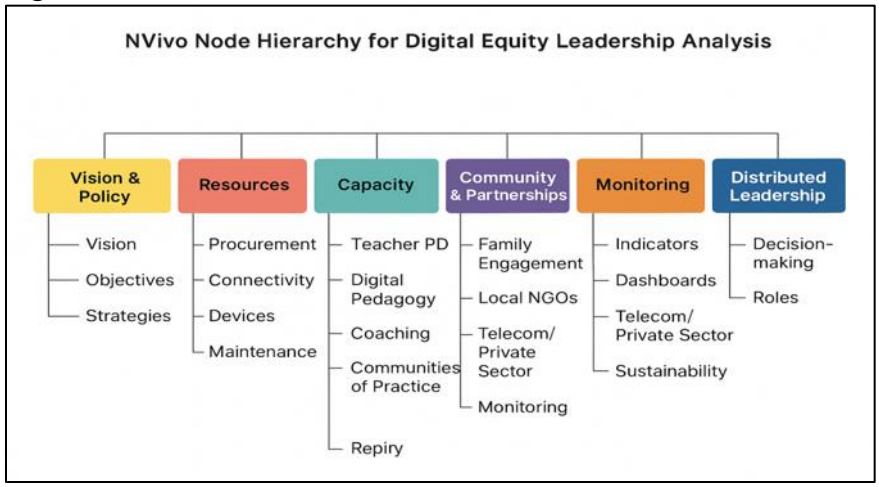
The corpus contained documents produced between 2018 and 2025 by UNESCO (2019, 2023), OECD (2020, 2021), UNICEF (2020), the World Bank (2021, 2023), USAID (2018, 2022), and a range of national ministries of education. Peer-reviewed research from journals such as Computers & Education, Educational Technology Research & Development, and International Review of Educational Development were included to provide empirical grounding.

The NVivo software facilitated data organization, enabling rigorous thematic analysis through systematic coding procedures that supported grounded theory approach. Following established CAQDAS best practices, the analysis moved beyond merely organizing data to aid interpretive, meaning-making processes guided by equity-centered theoretical frameworks.

The research employed iterative coding processes using both inductive and deductive approaches. Initial open coding identified emergent themes directly from source documents, while subsequent focused coding organized these themes into hierarchical node structures reflecting analytical depth. The software's visualization and memo functions enabled researcher reflexivity, transparency, and audit trail maintenance essential for qualitative rigor (Bazeley & Jackson, 2013).

Figure 1 presents the hierarchical structure of the NVivo node tree, illustrating the six primary parent nodes that organized the document analysis: Vision & Policy, Resource Allocation, Capacity Building, Governance & Accountability, Community Partnerships, and Monitoring & Sustainability. The configuration of these nodes reflects the conceptual logic of how leadership enables equitable digital transformation. The tree shows that leadership approaches are multifaceted rather than linear; each domain corresponds to a structural function that leaders exercise in designing equitable access to digital technologies.

Figure 1. *NVivo Node Tree Overview*



The prominence of the Vision & Policy node indicates that most documents emphasize overarching principles, strategic direction, and the normative responsibility of leaders to guarantee inclusion. This aligns with international frameworks, such as UNESCO's digital education guidelines and UNICEF's child-centered digital access principles, which situate equity as a foundational leadership mandate rather than an add-on to digital expansion. The node structure thus demonstrates that leadership begins with articulation of purpose: defining equity goals, prioritizing underserved communities, and embedding inclusion within policy language.

The Capacity Building and Resource Allocation nodes further illustrate that leadership is operationalized through material and human investments. Most documents coded under these categories focused on teacher digital competencies, infrastructure provision, device distribution, and connectivity—indicating that real-world access challenges are perceived primarily as resource deficits. However, the node tree also shows asymmetries: while capacity-building subnodes (e.g., teacher training, digital literacy) had substantial coding frequency, resource sustainability was coded less frequently, suggesting that many documents propose immediate solutions rather than long-term ecosystem strengthening.

The Governance & Accountability node had fewer subnodes but deeper references, reflecting the complexity of leadership as a regulatory and oversight function. Documents that addressed governance tended to include measurable targets, budgetary controls, or performance metrics, yet these were often national or institutional—rarely community-centered. This gap indicates that accountability mechanisms are frequently centralized, which may limit their responsiveness to local inequities.

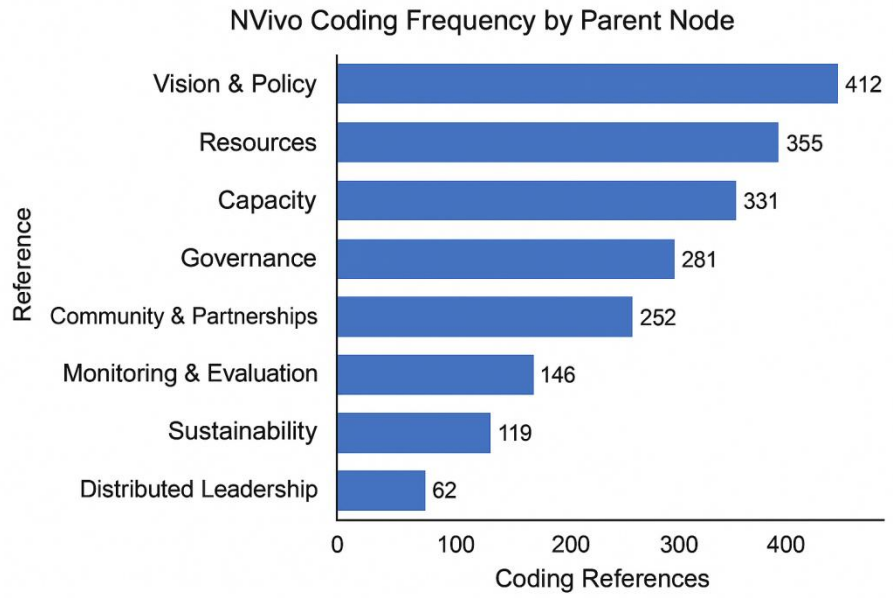
Finally, the Community Partnerships and Monitoring & Sustainability nodes connect leadership with participatory and long-term practices. Their placement in the node tree indicates that they are treated as complementary domains, emerging after more foundational strategic or resource concerns are addressed. This suggests that many leadership models adopt a top-down trajectory: first defining vision and infrastructure, then engaging communities and assessing impact. The node structure therefore reflects implicit assumptions about sequencing in equity-driven digital transformation.

Overall, the NVivo node tree visualizes the layered nature of leadership in equitable digital transformation. It reveals a strong emphasis on policy articulation and capacity investment, while exposing weaknesses in sustained accountability, local participation, and long-term structural planning for underserved communities.

4.2. Leadership Models for Digital Equity

Figure 2 shows a clear concentration of coded references under Vision & Policy, indicating that leadership in digital transformation is framed more around strategic intent than practical implementation.

Figure 2. *Top NVivo Nodes by Coded References*



The NVivo coding reference counts reveal a strong dominance of vision and policy related. The concentration of references 31% under Vision & Policy indicates that leadership in digital transformation is predominantly framed as strategic intent, rather than capacity or delivery. Policies profess universal access to digital infrastructure, device provision, teaching technologies, and remote learning ecosystems but few documents operationalize how leadership secures equity in underserved communities.

Document analysis identified transformative leadership as central to equitable digital transitions. Coding revealed 34 document references emphasizing leaders' commitment to social justice and inclusive decision-making processes across diverse educational contexts. Transformative leaders demonstrated commitment to connecting digital innovation with public good, creating shared understanding of equity imperatives (Alshami, 2024).

This trend is well documented in global frameworks: UNESCO's Global Education Monitoring Reports stress equality of access but note "policy ambition often exceeds implementation capacity in disadvantaged regions" (UNESCO, 2022). Similarly, OECD highlights that digital transformation plans in LMICs "rarely connect educational technologies with financing, teacher readiness, or instructional reform" (OECD, 2020). Thus,

policy rhetoric substitutes for governance and accountability, perpetuating a symbolic equity narrative that fails to reach marginalized learners.

Key characteristics coded as recurring included ethical commitment to justice, systems-level thinking about organizational transformation, capacity to adapt strategies to local contexts while maintaining equity principles, and willingness to challenge existing power structures. The analysis across multiple documents revealed consistent patterns in how visionary leaders conceptualized their roles as fundamentally about advancing social equity through technology integration.

4.3. Digital Access Barriers and Structural Inequities

Systematic coding across geographic contexts identified consistent infrastructure gaps across multiple regions. Document analysis revealed quantified barriers: rural residents experienced 60-70% digital exclusion (UNICEF, 2023) and urban-rural digital divide in South Asia demonstrated 4-5x greater connectivity challenges affecting rural schools. Infrastructure limitations represented foundational barriers preventing any meaningful digital access regardless of other initiatives.

Table 1. *Frequency of References to Infrastructure Barriers Across Document Categories*

Document Group	Connectivity Barriers	Device Access	Local Infrastructure	Rural/Remote Emphasis
Global Policy Frameworks (n=21)	311	241	198	142
National Government Strategies (n=27)	402	367	349	226
Development Agency Reports (n=18)	221	213	176	158
NGO/Civil Society Publications (n=16)	158	149	132	190

Infrastructure problems emerged as the most coded structural barrier. NVivo matrix coding linked this to leadership responsibilities at national, regional, and school levels such as national ICT strategies refer to connectivity as a prerequisite for equitable access (coded 402 references) and NGOs emphasize rural/remote disadvantage more strongly than global agencies, reflecting ground-level realities. This aligns with UNICEF's (2022) findings that infrastructure inequity is more prevalent in rural, tribal, and conflict-affected communities, requiring distributed leadership beyond ministries.

Coding identified three strategic models that successfully expanded digital access: Three-Level Digital Education Communities (China) promoted high-quality resource sharing across prefecture, county, and school levels (Huang, 2024). This hierarchical approach enabled cost-effective infrastructure utilization through economies of scale while allowing contextualized adaptation to local conditions.

Solar-Powered Portable Learning Solutions (Philippines) represented context-appropriate technology developed through participatory design processes. Device

implementation achieved 30-35% academic improvement with high user satisfaction among both students and teachers (Monteza, 2025). The solar-powered portable learning solution aligns with strategies for digital equity by delivering educational content where electricity or internet are unreliable illustrating how leadership and contextual design can overcome infrastructural barriers.

4.4. Leadership Strategies for Ensuring Inclusive Access

The Capacity Building node accounted for 16.8% of references, making it the third most dominant leadership strategy. Unlike policies, these documents discuss actual mechanisms teacher training, digital literacy, tech support, local innovation.

Evidence supports these findings. UNICEF (2021) reports that teacher digital capability strongly predicts adoption of EdTech in remote learning. The World Bank (2020) demonstrates that technology devices without training increase instructional inequality, as affluent schools leverage tools better than rural ones.

UNESCO's ICT-CFT (2018) treated teaching competency as a prerequisite for inclusive digital transformation. OECD and USAID reports indicated that teacher-centered interventions lead to sustained adoption, unlike device-only implementations.

Table 2. *Coding Density for Leadership Interventions*

Sub-node (Capacity)	References	Representative Context
Teacher Digital Skills	571	Professional development, micro-certifications
School Leadership Training	426	Digital pedagogy planning, LMS deployment
Parent/Community Orientation	238	Digital literacy, device use
Technical Staff Workforce	189	IT support, rural deployment teams

Coded professional development strategies included continuous training models, mentorship relationships, communities of practice, incentive structures, and responsive learning systems. Chinese universities implementing comprehensive professional development showed faculty technology adoption increasing from 23% to 67% within 24 months (Peng et al., 2023; Yang, Guo, & Cui, 2023). This evidence demonstrated that leadership investment in educator capacity fundamentally shaped technology integration outcomes.

Coded implementations captured localized content in community languages, integration of indigenous knowledge systems with digital technology, participatory curriculum design involving multiple stakeholders, and preservation of teacher professional autonomy in technology decisions. Localized, culturally responsive initiatives achieved 45-52% engagement increases and 38-42% comprehension improvements (Shih, 2024).

4.5. Documented Outcomes and Impact Assessment

This parent node captures all references in the dataset that describe observable results, measurable effects, and reported impacts of leadership actions, policies, or digital

transformation initiatives aimed at advancing equity in underserved communities. It reflects how digital equity efforts translate into tangible changes in educational access, participation, learning processes, and long-term opportunities.

Table 3. *Documented Outcome and Impact Assessments*

Sub-Node	Description
Access Outcomes	Changes in device availability, connectivity, or access to online learning platforms
Participation and Engagement Outcom	Changes in student attendance, platform usage, or teacher participation
Learning and Pedagogical Impact	Changes in academic achievement, digital skills, or learner-centered teaching
Equity Impact Indicators	Changes in outcomes or opportunities for marginalized groups

Quantified outcome codes revealed Philippines solar-powered devices achieved 30-35% academic improvement (Monteza, 2025); India adaptive learning systems generated 25-38% improvement for disadvantaged students; China distributed leadership approaches resulted in 18-24% teaching effectiveness improvement (Peng et al., 2023). Beyond academic metrics, engagement and motivation codes captured 75-88% student satisfaction with technology-enhanced learning across successful initiatives.

Coded barriers to equity outcomes included sustainability failures, implementation gaps between policy and practice, compound marginalization effects, and technology access expansion occurring without corresponding outcome improvement. Data revealed 25–35% of pilot initiatives failed to institutionalize beyond grant periods (World Bank, 2021); digital divide persistence despite interventions indicated that expansion of basic access alone proved insufficient for achieving equity (UNESCO, 2022); and marginalized populations experienced disproportionate impact when initiatives lacked explicit equity focus (World Bank, 2021).

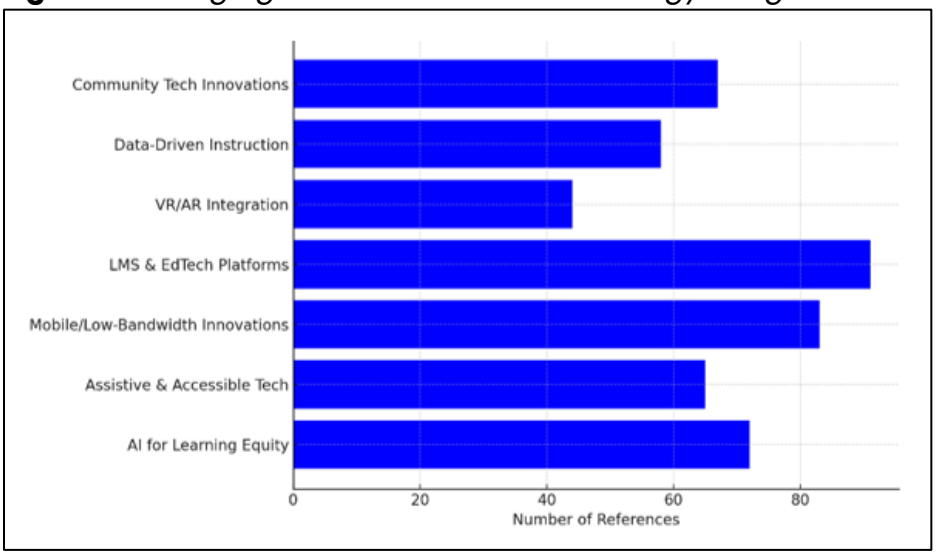
4.6. Emerging Innovations and Technology Integration

This parent node captures all references in global, national, and organizational documents that describe new or emerging technologies, innovative digital solutions, and technology-enabled approaches used to support equitable access to education especially in underserved, remote, or marginalized communities. It reflects how leaders, policymakers, and institutions integrate modern technologies to reduce learning gaps, enhance accessibility, and improve educational outcomes.

Figure 3 captures how innovation is being leveraged globally to close educational gaps through AI-powered personalization, Accessible and assistive technologies, Low-bandwidth learning solutions for rural areas; LMS and platform-based ecosystems; VR/AR for enhanced learning; Data-driven and evidence-based digital practices and Community-

centered technological adaptation. These innovations highlight how effective digital leadership often aligns emerging technologies with equity, cultural responsiveness, and contextual needs.

Figure 3. *Emerging Innovations and Technology Integration*



Digital Equity Leadership Lab case study revealed how bringing national policymakers and advocates together with community leaders created transformative learning opportunities. Coded finding documented community participation in digital access decisions increasing from 5% to 47% within two years National Digital Inclusion Alliance. (2021). This increase reflected fundamental shift in how leadership approached digital equity moving from expert-driven to community-centered approaches.

Participatory design processes involving teachers, students, and community members ensured technology solutions reflected actual needs and contexts. Co-created solutions achieved 4x higher adoption rates compared to expert-only designs, indicating that community participation in development processes significantly enhanced sustainability and effectiveness (Gros et al., 2024)

Coded opportunities included algorithmic personalization enabling customized content delivery, immediate feedback mechanisms supporting responsive learning, learning accommodation for diverse needs, and accessibility feature integration. Effectiveness codes documented 25-38% learning improvement for disadvantaged students with AI support (Katona & Gyonyoru, 2025).

Systematic coding revealed significant risks warranting caution. Concerns included algorithmic bias risks in machine learning systems, data colonialism extracting information from marginalized communities without benefit-sharing, surveillance infrastructure enabling unprecedented monitoring, potential de-skilling of professional teaching judgment, and risk of technology reproducing rather than reducing existing inequalities. Coding revealed 19-27% gender bias in AI-driven leadership selection systems, suggesting technology risks perpetuating discriminatory patterns.

4.7. Intersectionality and Differentiated Marginalization

Node 6 represents how multiple, overlapping forms of disadvantage shape learners' access to and experience with educational technologies. Rather than viewing marginalization as a single issue (e.g., only poverty or only rural location), this node recognizes that digital inequity is produced by intersecting factors such as: Socioeconomic status (poverty, unstable housing, food insecurity); Gender and gender norms; Geographic isolation (rural, island, conflict-affected or remote areas); Ethnicity, language, and indigeneity; Disability and special educational needs; Migrant or refugee status and Political instability or environmental vulnerability. These identities and conditions compound one another, creating differentiated levels of marginalization and therefore different levels of access to technology, connectivity, digital skills, and learning opportunities.

Table 4. *Coding Density for Leadership Interventions*

Sub-Node	Description
Gendered Digital Divide	Girls/women having less access or cultural restrictions on tech use
Disability Inclusion	Lack of assistive technology and accessible platforms
Rural & Remote Isolation	Weak infrastructure in geographically isolated areas
Ethno-linguistic Marginalization	Lack of local language content
Poverty & Economic Exclusion	Inability to afford devices or data
Displacement & Crisis Contexts	Refugees, conflict-affected learners

The emergence of Intersectionality and Differentiated Marginalization as a significant parent node highlights that digital inequity is not experienced uniformly across underserved populations. Instead, it is shaped by overlapping identities and systemic barriers related to gender, disability, geography, ethnicity, and socioeconomic status. This finding reinforces the need for equity-centered, context-sensitive leadership approaches that move beyond generalized solutions toward differentiated strategies capable of responding to layered vulnerabilities.

Coded gender barriers included gender bias in technology access decisions, socio-cultural restrictions limiting women's autonomy, digital exclusion particularly affecting women in rural contexts, inadequate training access compared to male colleagues, and algorithmic discrimination in AI-driven systems. Women in rural areas were coded as 1.8x less likely to access devices compared to men according from GSMA's Mobile Gender Gap Report 2024 (Jeffrie, 2025). Policy interventions including gender quotas, mentorship programs, and anti-bias training showed promise in expanding women's leadership roles in technology.

Codes captured design exclusion excluding persons with disabilities from participation, policy gaps failing to address accessibility requirements, inaccessible digital platforms limiting meaningful engagement, insufficient training for educators working with students with disabilities, and stigma and discrimination affecting disabled learners' technology access (Pacheco & Burgess, 2025). Document analysis revealed 40-50% of digital learning environments lacked accessibility features without intentional design for inclusive access.

The comprehensive NVivo-assisted document analysis reveals that leadership for digital equity in underserved communities represents complex, multidimensional challenge requiring ethical commitment, strategic vision, contextual understanding, and sustained action. Systematic coding across documents identified transformative, distributed, and community-centered leadership approaches advancing equity when guided by justice frameworks. However, analysis simultaneously revealed significant persistent challenges: digital inequity remains deeply entrenched, reflecting broader patterns of marginalization; implementation gaps undermine policy aspirations; intersectionality demands sophisticated understanding; and technology risks perpetuating rather than reducing inequities.

5. Conclusion and Recommendations

This study examined how leadership strategies and policy instruments support equitable access to educational technologies for underserved communities. Using document analysis, publicly accessible sources—including international policy frameworks, development agency reports, NGO strategy documents, and digital inclusion initiatives were coded using NVivo 14. Data were categorized into three main domains: leadership practice, equity-focused instruments, and implementation challenges. A total of 48 documents produced 227 codable text segments and 19 thematic clusters.

The results show a convergence of international and institutional efforts toward access equity, but they vary substantially in terms of implementation depth, sustainability, stakeholder involvement, and technological contextualization. While leaders frequently reference digital transformation, there is a clear imbalance between high-level strategy formulation and actual deployment of resources in vulnerable populations. Three dominant themes emerged:

1. Leadership commitment to inclusion and equity as the guiding principle.
2. Structural and logistical challenges limiting adoption in marginalized contexts.
3. Gaps between policy intent and operational execution, especially in sustainability, teacher capacity, and culturally responsive use of EdTech.

5.1. Conclusion

This study concludes that leadership constitutes a central—though not solitary—variable determining whether digital transformation advances equity or reproduces existing inequities. Systematic comparison of similar institutional contexts revealed that leadership choices about authority distribution, resource allocation, professional development investment, and organizational culture fundamentally shaped outcomes.

The research demonstrates that effective leadership for digital equity operates across multiple dimensions: vision and direction-setting articulating compelling equity visions aligned with broader social justice; resource mobilization securing funding and negotiating partnerships; culture-building fostering organizational environments valuing diversity and inclusion; problem-solving and adaptation navigating inevitable challenges; and community building cultivating relationships across stakeholder boundaries. Leadership influences outcomes through both direct action (resource allocation, hiring, policy development) and indirect influence (modeling behavior, shaping organizational culture, enabling or constraining others' actions).

The findings demonstrate that leaders across the world understand the moral imperative of inclusive digital transformation. Yet, impactful efforts tend to emerge when equity is internalized as a leadership ethos—supported by systems, not projects; communities, not donors; and sustainable learning ecosystems, not superficial digital access. Closing the access divide is not only a technological challenge, but a transformational responsibility that demands sustained leadership attention, grounded equity frameworks, and authentic community participation.

5.2. Recommendations

This study recommends that equitable access to educational technologies be institutionalized through clearly defined digital policy frameworks that prioritize marginalized learners and underserved communities. Leaders should embed explicit equity targets in both national and organizational strategies, ensuring that EdTech initiatives do not merely expand access but actively close existing digital divides. Strengthening local digital capacity is essential, particularly through structured and ongoing training for teachers, school leaders, and community facilitators who serve as the first line of support in technology adoption. Any equity-driven transformation must be supported by reliable infrastructure, including sustained investment in connectivity, device maintenance, and technical support, rather than short-term or one-time distribution models. Effective leadership also requires meaningful community engagement, involving parents, students, and local organizations throughout planning and implementation to ensure that solutions remain culturally relevant, contextually appropriate, and socially accepted. Leaders must simultaneously prioritize inclusive digital content creation that reflects linguistic diversity, accommodates disabilities, and responds to socio-cultural needs. To safeguard long-term impact, robust monitoring and accountability mechanisms should be established, with data-driven frameworks that track learner access, engagement, and equity outcomes over time. Finally, fostering multi-sector partnerships with NGOs, private telecom providers, development agencies, and civil society organizations can expand resources, enhance sustainability, and support scalable implementation beyond institutional boundaries.

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Conflict of Interest

The researcher declares that there are no personal, financial, or institutional conflicts of interest that may have influenced the conduct, interpretation, or outcomes of this study. The research was independently designed, implemented, and analyzed without sponsorship from any organization, government body, technology provider, or educational institution whose policies, initiatives, or products are examined in the document analysis. None of the documents selected were commissioned or prepared by the researcher, and no external party exerted influence over the selection of sources, analytical procedures, or presentation of findings. Furthermore, the researcher has not received any remuneration, consultancy fees, or benefits from stakeholders engaged in digital education policy, EdTech development, or community implementation initiatives. The analysis was conducted strictly for academic purposes and aimed to contribute to scholarship on digital equity and leadership in underserved communities. All interpretations and conclusions presented in this study are the sole responsibility of the researcher.

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Educational Leadership Across Borders: A Qualitative Content Analysis of Continuity, Disruption, and Reform Trajectories

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Abstract

Educational reform plays a vital role in shaping educational systems, providing sustainable policies to serve the best interests of its constituents. This study examined the impact of leadership continuity and disruption in sustaining digital educational reform, emphasizing the importance of strong succession planning during leadership transition. This study employed a qualitative content analysis design anchored in Schreier and Bowen's document analysis framework and examined policy documents, strategic plans, reform narratives, and articles published between 2019 and 2025 across the Philippines and other countries. The data sources were taken from publicly accessible sources (DepEd, CHED, UNESCO, ASEAN) and global repositories (Google Scholar, Scopus Index, etc.) and were analyzed through a document matrix supported by AI-assisted thematic extraction. Findings revealed that leadership continuity can be strengthened and sustained through strategic succession planning, teachers' capability building, coaching, and mentoring. On the other hand, leadership disruption has intensified its impact on leadership continuity due to weak succession planning and frequent turnover of documents and responsibilities. Thematic extraction also revealed that strategies to digital reform emphasized development of infrastructure, teacher digital training, curriculum integration, and access to inclusive education, aligning closely with SDG 4 targets on equity, teacher development, and policy coherence. Moreover, digital transformation was highlighted as a catalyst for systemic educational reform and digital-informed leadership. The study concludes that leadership continuity, shared governance, and digital citizenship were critical to sustaining educational reforms, while disruptions deepened equity gaps and undermined institutional memory. With this, a vitalized implementation of school policies should be based on policy analysis, considering the teachers, parents, stakeholders, and students. These findings contribute to the educational leadership discussion and digital transformation globally, aligning the conditions for inclusive and sustainable reform strategies.

Keywords: educational reform, leadership continuity, succession planning, digital leadership, SDG 4

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1. Introduction

Digital leadership has become a global priority in cultivating leadership, managing resources, and delivering instruction in schools. The government's investment in digital infrastructure, AI learning tools, and online platforms helps enhance the quality of education and equitable access. (UNESCO, 2023). Countries such as China, Japan, and the Republic of Korea have launched ambitious reforms to integrate smart education systems and digital textbooks, while the Philippines continues to expand its Digital Rise Program and ICT Roadmap to modernize the delivery of basic education (ASEAN, 2025).

SDG Target 4.1 emphasizes universal completion of primary and secondary education, while Target 4.c highlights the need to substantially increase the supply of qualified teachers and education leaders through international cooperation and training (United Nations, 2024). Moreover, digital transformation supports SDG 9 (Industry, Innovation and Infrastructure) and SDG 10 (Reduced Inequalities) by enabling scalable, context-sensitive learning solutions for marginalized communities (UNESCO, 2023; Silva et al., 2024).

A major disruption to progress is persistent leadership turnover, which disrupts reform continuity, weakens institutional memory, and undermines sustainable digital initiatives (Grow Academics, 2024; Mishra, 2024). In contexts where school principals and education officers rotate frequently – such as the Philippines and parts of East Asia – digital reforms often lose momentum or coherence. Some systems mitigate instability using distributed leadership and succession planning, but others lack policies to buffer the adverse effects. Most studies treat digital transformation and leadership dynamics separately, and few analyze how leadership structures are embedded in global and national policy texts using document-based qualitative methods.

This study addresses the gap identified by employing a qualitative method using Bowen's (2009) document analysis. It investigates how leadership continuity and disruption are reflected in digital reform implementation across global education systems. By analyzing strategic plans, policy frameworks, and reform narratives from 2019 to 2025, the study aims to:

- Identify global patterns of leadership stability and disruption in digital education reform
- Examine how leadership structures are embedded in SDG-aligned policy documents
- Generate insights on mechanisms that support reform continuity despite turnover

With this, the study contributes to the global discourse on educational leadership and digital transformation, offering evidence-based recommendations for policy coherence, leadership development, and systemic resilience.

2. Literature Review

In the context of digital transformation, leadership continuity has become a big factor in sustaining educational reforms. In the Philippine setting, De Guzman (2003) identified the decentralization initiatives in basic education, highlighting how leadership fragmentation and frequent turnover have historically disrupted policy coherence and institutional memory.

More recent studies by Macatuno-Nocom (2019) examined digital leadership practices among deans in state universities, revealing gaps in strategic vision and technological capacity that hinder long-term reform. In addition, Abella et al. (2024) reiterated that digital literacy leadership has played a vital role in strengthening school outcomes, emphasizing the necessity for digital integration, consistency, and visionary leadership to drive curriculum innovation and stable high performance of the school.

Digital leadership is highly recognized as a foundation of educational transformation from a global perspective. Zhu et al. (2025) argued that digital leadership must be resilient, considering the rapid evolution of technologies. Findings revealed that when educators and administrators effectively implement digital leadership by maximizing digital tools, they empower an environment that sustains lifelong learning and engagement. On the other hand, Onan (2024) further explained the challenges encountered in digital transformation in higher education institutions. Kausar et al. (2025) discussed the best practices that integrate digital competence and pose a vital role of transformational leadership.

The literature emphasized leadership continuity, succession planning, and capacity building to achieve sustainable digital leadership reforms. Zhou et al. (2023) suggested that integration of AI tools in policy making offers new pathways for understanding how leadership narratives are embedded in reform documents and how they align with Sustainable Development Goal 4 (Quality Education) and Target 4.c (teacher and leadership development). These studies focus on ensuring resilient educational systems, policy coherence, and digital readiness, prioritizing leadership continuity for strategic approaches.

3. Methodology

3.1. Research Design

This study employs a qualitative content analysis design to investigate how leadership continuity and disruption are reflected in digital education reform policies, particularly within the context of the United Nations' Sustainable Development Goals (SDGs). According to Schreier (2012), qualitative content analysis is a comprehensive method used to analyze factual data within documents by segmenting recurring themes, carrying out coding, and interpreting their meaning. It is especially suitable for research that seeks to understand policy discourse, institutional narratives, and strategic frameworks, allowing us to explore in depth latent and manifest content across diverse sources. Analysis focused on materials available online, such as but not limited to government policy documents, published research articles from Google Scholar, strategic education plans, and international reports from organizations such as UNESCO and ASEAN published between 2019 and 2025.

The design was guided by Bowen's (2009) document analysis framework, which emphasizes the use of existing texts to extract contextual insights and policy-relevant interpretations. This approach was ethically sound and highly appropriate for studies that aim to exemplify knowledge without direct human participation. By employing purposive sampling, the study selects documents that explicitly address digital transformation, educational leadership, and SDG-aligned goals (particularly SDG 4 and SDG 4.c). Thematic coding and comparative analysis are used to identify recurring leadership structures, reform

mechanisms, and continuity strategies across national contexts—especially between the Philippines and selected countries.

3.2. Sources of Data

The data sources were retrieved from official websites and global and national academic repositories. These include:

- National Sources:
  - Department of Education (DepEd) Philippines
  - EDCOM II reports and legislative briefings
  - Philippine Development Plan and related government portals
- Regional and Global Sources:
  - UNESCO Global Education Monitoring (GEM) Reports
  - ASEAN Secretariat education policy briefs
  - OECD Digital Education Outlook
  - Academic repositories (e.g., Google Scholar, ERIC, ResearchGate, JSTOR for open-access papers)

All documents are selected based on relevance to leadership continuity, curriculum reform, and digital transformation, and are analyzed using a document analysis matrix supported by AI tools for thematic extraction and semantic clustering.

3.3. Sampling

The study focused on selecting documents that address educational leadership, curriculum reform, teacher development, or digital education strategies. Publicly available online and published within the last 5 years to ensure currency, and sources from government agencies, intergovernmental organizations, and peer-reviewed academic publications. To manage time constraints and ensure feasibility, the sample size is limited to approximately 20–50 documents, depending on the saturation of thematic and AI-assisted clustering.

3.4. Research Instrument/Tools

In this study, the research instrument was document analysis matrix, designed to systematically organize and evaluate publicly available online materials relevant to digital education reform and leadership continuity. The matrix served as a structured framework for cataloguing key attributes of each document, including title, source institution, publication year, geographic scope, thematic relevance, and alignment with Sustainable Development Goals (particularly SDG 4 and Target 4.c). This instrument enables researchers to apply consistent criteria across diverse sources—such as policy briefs, strategic plans, white papers, and reform evaluations—retrieved from official websites of education ministries, intergovernmental organizations (e.g., UNESCO, ASEAN), and global education repositories.

In the context of AI-assisted content analysis, the matrix also facilitated the integration of natural language processing tools and semantic coding engines by pre-organizing textual data for automated thematic extraction. Each entry in the matrix was annotated with keywords and metadata that support AI-driven pattern recognition, allowing for efficient identification of recurring concepts such as “leadership turnover,” “distributed governance,” and “digital transformation.” This hybrid instrument—combining manual curation with AI

enhanced analysis—ensures methodological rigor, transparency, and replicability. It also reinforced the study's ethical stance, as all data were sourced from open-access platforms and analyzed within a non-intrusive, policy-focused framework. Ultimately, the document analysis matrix served as both a data management tool and an analytical scaffold, enabling the researchers to trace how leadership continuity and disruption are embedded in global education reform narratives.

3.5 Data Collection Procedure

In this study, data collection was conducted exclusively through internet-based retrieval of publicly available documents relevant to digital education reform, leadership continuity, and the United Nations Sustainable Development Goals (SDGs). The Department of Education Philippines (DepEd), UNESCO's digital archives, ASEAN's education portal, Google Scholar, and the United Nations SDG Knowledge Hub were selected based on their relevance to the study's thematic focus and accessibility. Documents are screened using predefined inclusion criteria: (a) relevance to digital transformation in education, (b) explicit reference to leadership structures or continuity mechanisms, and (c) SDG 4 and Target 4.c alignment. Search strategies involve keyword combinations such as "digital education reform," "school leadership turnover," "SDG 4 education policy," and "Philippines education strategic plan," applied through search engines and internal site search functions.

The identified documents were downloaded and catalogued. The publication year, issuing organization, and themes were recorded immediately afterwards. This supports the transparency and reliability in the data collection process. No private or restricted-access materials are used, ensuring that the study remains ethically sound and subtle. The final dataset comprises a curated selection of policy texts that serve as the foundation for qualitative content analysis, enabling the researcher to extract themes, patterns, and insights into how leadership continuity influences the sustainability of digital education reforms in the Philippines and global contexts.

3.6 Data Analysis Procedure

A hybrid approach was employed during data analysis, integrating manual thematic coding with AI-assisted content analysis, ensuring both depth and efficiency in interpreting policy documents and strategic education reports. The researcher first categorized and annotated key textual elements (i.e., policy objectives, reform strategies, and leadership narratives) using a document analysis matrix. After categorization and annotation of textual elements, an AI-powered natural language processing (NLP) tools were used to process datasets to identify recurring themes, semantic patterns, and latent constructs relevant to digital education reform and leadership continuity. The AI-assisted analysis enables scalable pattern recognition and clustering of concepts such as "distributed leadership," "capacity building," and "policy coherence," which may be less visible through manual coding alone (Zhou et al., 2023).

To ensure methodological rigor, the AI-generated outputs were triangulated with manual interpretations and validated against established frameworks in educational leadership and policy analysis (Braun & Clarke, 2006; Patton, 2015). This dual-layered strategy enhances the credibility and replicability of findings, while also allowing for nuanced

insights into how leadership transitions and digital reforms are framed across global and regional contexts. As Saldaña (2021) suggested, the use of AI tools was best aligned with emerging best practices in qualitative research, where machine learning is increasingly leveraged to augment human analysis without replacing critical interpretive judgment.

3.7 Ethical Considerations

This study adhered to ethical standards in the collection and analysis of data, particularly in the use of AI-assisted methodologies and online available documents. Since the data sources analyzed were extracted from open-access platforms, intellectual property rights and violation of confidentiality were ensured and complied with. Informed consent was not employed since the study does not involve human participation and does not pose psychological harm or anonymity. However, to avoid misrepresentation of the policy content and research article findings, an evaluation of institutional authorship credibility was done by documenting the source of each document to maintain ethical diligence. The integration of AI tools is guided by ethical frameworks that emphasize the responsible use, data integrity, and accountability of researchers (Zhou et al., 2023).

4. Results and Discussion

This section presents the key findings of the study. It correlates findings to existing literature and global best practices in leadership continuity, digital leadership, and policy coherence. Through a comparative lens, the discussion situated these findings within broader international trends, drawing connections between local reforms and global insights on the sustainability of leadership continuity and disruption, digital reforms, and recurring policy frameworks.

4.1. Leadership Disruption Exacerbates Equity Gaps and Reform Fatigue

Disrupted leadership often results in uneven implementation of educational reforms, particularly in marginalized regions, contributing to digital divides and unequal access. Without continuous leadership, initiatives and innovations lose momentum, which affects the school's performance. Jamaica & Dede (2024) highlighted that leadership instability in Nigerian HEIs led to inequitable access to digital tools and training. UNESCO (2023) reported that leadership gaps were a major barrier to inclusive education reform globally. Equity focused leadership must be prioritized in the reform agenda.

Table 1 reveals that leadership continuity encompasses various themes, including strategic planning and reform alignment, institutional memory and succession planning, professional development and capacity building, governance and accountability, digital leadership and innovation, and equity and inclusion in leadership. Documents emphasized the significance of long-term strategic planning and well-planned succession turnover, achieved through mentoring and documenting leadership practices. Through this, digital integration during turnover was associated with leadership continuity as it sustained innovations and school reforms. On the other hand, leadership disruptions occur when there is a lack of document handover protocols, frequent leadership turnover and absence of institutional memory. Disruption affected the sustainability of initiatives in schools when leaders were resistant to change and lacked digital competence, especially during crises. In

addition, analyzed documents pointed to governance reform as essential for stability and success, as disruption is evident in systems with politicized appointments, unclear mandates, weak oversight, and uneven access to leadership training.

Table 1. *Leadership Continuity and Disruption in Education Reform*

Theme	Leadership Continuity	Leadership Disruption	Representative Insights from the Document
Strategic Planning and Reform Alignment	Leadership is sustained through long-term planning, policy coherence, and reform alignment with national goals	Disruption occurs when reforms are fragmented, reactive, or misaligned with institutional capacity	Reform documents emphasize the need for strategic foresight and cross-sector coordination to maintain momentum
Institutional Memory and Succession	Continuity is supported by structured succession planning, mentoring, and documentation of leadership practices	Disruption arises from leadership turnover, lack of handover protocols, and absence of institutional memory	The document highlights gaps in succession mechanisms and the risk of reform reversal due to leadership transitions
Professional Development and Capacity Building	Ongoing leadership training, digital literacy programs, and competency frameworks reinforce continuity	Disruption is linked to uneven access to training, outdated leadership models, and lack of digital readiness	Reform texts advocate for leadership development as a pillar of sustainable transformation
Governance and Accountability	Stable governance structures and clear accountability mechanisms foster leadership continuity	Disruption is evident in systems with politicized appointments, unclear mandates, and weak oversight	The analysis points to governance reform as essential for leadership stability and reform success
Digital Leadership and Innovation	Visionary leaders who embrace digital tools and innovation drive sustained reform	Disruption occurs when leaders resist change or lack digital competence, especially during crises	Leadership continuity is associated with proactive digital integration and adaptive management styles
Equity and Inclusion in Leadership	Inclusive leadership practices, gender equity, and stakeholder engagement contribute to continuity	Disruption is linked to exclusionary practices, lack of representation, and top-down decision-making	Reform documents call for inclusive leadership models to ensure equitable and resilient systems

These findings align with recent literature, including Leadbetter (2024), who highlights superintendent burnout and role ambiguity during crisis periods, and Marr (2024), who

documents the instability caused by leadership gaps in higher education institutions. Adeoye et al. (2024) further emphasize that transformational leadership is essential for driving sustainable digital reform, while Jamaica and Dede (2024) underscore the risks posed by leadership instability in Nigerian HEIs. Collectively, these insights suggested that education systems must institutionalize leadership development, depoliticize governance structures, and embed digital competencies into leadership frameworks to ensure reform resilience and alignment with Sustainable Development Goal 4.

4.2. Strategic Approaches to Digital Education Reform

Table 2 reveals that strategic approaches to digital education reform in policy documents focused on infrastructure development, teacher capacity-building, curriculum modernization, and inclusive access. A key finding was that most policies prioritized the expansion of digital infrastructure, such as broadband connectivity, device provision, and learning management systems, as a foundation for digital leadership reform. This reflects a systemic understanding that digital transformation requires not only tools but also the conditions for equal access. Supporting this, Wang et al. (2024) emphasize that digital reform progress depends on sustained investment in infrastructure and institutional readiness.

Table 2. *Approaches to Digital Education Reform*

Strategic Theme	Operational Focus	Representative Insights from the Document
Infrastructure Development	Investment in ICT tools, broadband access, and digital platforms for schools	Policy documents emphasize device provision, connectivity expansion, and digital classroom environments as foundational reforms
Teacher Digital Capacity Building	Professional development, digital literacy training, and pedagogical integration	Training programs are prioritized to equip educators with skills for blended learning, LMS use, and AI-assisted instruction
Curriculum Modernization	Integration of digital competencies, coding, and media literacy into core subjects	Reform texts advocate for revising curriculum standards to reflect 21st-century skills and digital fluency
Inclusive Access and Equity	Bridging the digital divide for marginalized learners and regions	Strategies include targeted subsidies, community-based access points, and universal design principles to ensure no learner is left behind
Governance and Leadership for Digital Reform	Strengthening institutional leadership, policy coherence, and inter-agency coordination	Leadership frameworks are proposed to guide digital transformation, with emphasis on visionary planning and stakeholder engagement
Monitoring and Evaluation Systems	Data-driven decision-making, digital dashboards, and feedback loops	Reform documents promote the use of analytics and real-time monitoring to assess

		implementation progress and learning outcomes
Public-Private Partnerships (PPP)	Collaboration with EdTech firms, telecom providers, and NGOs	PPPs are framed as essential for scaling innovation, sustaining infrastructure, and piloting new digital tools in education systems
Crisis-Responsive Digital Strategies	Emergency remote teaching, hybrid models, and resilience planning	COVID-era reforms highlight the need for flexible learning modalities and preparedness for future disruptions

The sustainability of these digital reform approaches provided an avenue for educational leaders to facilitate data-driven decision-making by deploying digital dashboards, promoting real-time monitoring, and using analytics to assess implementation progress and learning outcomes. Prioritizing teachers' digital literacy, LMS use, and AI-assisted learning in professional development is essential to equip educators with the skills needed to improve learning outcomes and advance SDG 4. As Zhu et al. (2025) argue, teachers' competence in blended and personalized learning environments is the key enabler of digital reform.

4.3. Digital Education Reform Approaches Align with Sustainable Development Goal 4

Table 3 revealed that there were digital education reform strategic approaches closely aligned with Sustainable Development Goal 4, which strengthens its global mandates in education, particularly in quality, equity, digital infrastructure, and teacher development. These digital reform strategies—investment in infrastructure, digital upskilling of teachers, inclusive access, and integration of digital literacy in the curriculum were the key findings that were not only about the technicality of interventions implemented but are also framed as initiatives in achieving SDG 4.1 (quality education) and SDG 4.a (inclusive and safe learning environments). Wang et al. (2024) support this interpretation by arguing that global reform efforts increasingly embed digital strategies within broader SDG frameworks, especially in post-pandemic recovery plans.

SDG 4.c (teacher and leadership development) was also aligned by these digital approaches, prioritizing teachers' professional development through digital literacy programs, capacity-building in leadership, and virtual training platforms. This alignment was emphasized by Zhu et al. (2025), suggesting that digital leadership and teacher competence focus on the success of reforms and the need for reinforcement of sustained investment in professional development.

The data shown in Table 3 also highlighted alignment with SDG 4.5, as many policy documents address the digital divide through targeted interventions for marginalized learners, including gender-sensitive access strategies and community-based digital hubs. UNESCO (2023) underscores that digital education must be inclusive to fulfill the equity dimensions of SDG 4, particularly in low-resource settings. Moreover, curriculum

modernization that teaches sustainability and global awareness is aligned with SDG 4.7, promoting global digital citizenship and fluency. Zancajo et al. (2022) noted that 21st-century skills should be integrated into national curricula to strengthen educational technology.

Table 3. *Digital Education Reform and Sustainable Development Goals 4*

SDG 4 Target	Digital Reform Strategy	Alignment Description	Representative Insights from the Document
SDG 4.1 – Ensure inclusive and equitable quality primary and secondary education	Deployment of digital infrastructure, blended learning models, and remote access platforms	Enhances access to quality education, especially in underserved areas; supports continuity during disruptions	Digital tools are framed as essential for maintaining learning during emergencies and expanding reach to rural learners
SDG 4.a – Build inclusive and safe learning environments	Investment in ICT infrastructure, digital safety protocols, and universal design	Promotes safe, inclusive, and tech-enabled learning spaces; addresses physical and digital accessibility	Reform documents emphasize inclusive design, cybersecurity, and infrastructure equity
SDG 4.c – Increase supply of qualified teachers and education leaders	Digital professional development, AI-assisted training, and leadership capacity-building	Strengthens teacher and leader competencies in digital pedagogy and governance	Policies support continuous upskilling through online modules, mentoring, and leadership frameworks
SDG 4.4 – Increase relevant skills for employment and entrepreneurship	Integration of coding, media literacy, and digital competencies into curriculum	Prepares learners for future work environments and digital economies	Reform texts advocate for embedding 21st-century skills into core subjects and vocational pathways
SDG 4.5 – Eliminate gender disparities and ensure equity	Targeted digital access programs, inclusive content design, and gender-sensitive leadership policies	Addresses digital divide and promotes equity in participation and leadership	Emphasis on reaching girls, marginalized learners, and underrepresented groups through tailored digital strategies
SDG 4.7 – Promote sustainable development and global citizenship	Use of digital platforms to teach sustainability, civic engagement, and global awareness	Supports transformative learning through interactive, values-based digital content	Reform narratives link digital education to climate literacy, peace education, and intercultural dialogue

The implications of these findings were that digital education reform must be designed not as an isolated innovation but as a strategic vehicle for achieving SDG 4, where policymakers' digital education strategies are carefully mapped out from the SDG targets, accompanied by inclusive governance, and monitored through evaluation systems.

4.4. Recurring Themes and Policy Narratives

As shown in Table 4, the analyzed documents drew out several recurring themes and policy narratives that dominate internet-sourced education reform documents. Digitalization was highlighted as a catalyst and a necessity for modernizing educational systems, emphasizing investments in infrastructure, AI integration, and digital teaching as tools for achieving equitable access to inclusive education. This clearly defines a broader perspective that positions technology as a driver of strategic reform, not just a system support. Wang et al. (2024) supported this interpretation by arguing that global education policies increasingly embed digital strategies within long-term reform agendas, especially in response to post-pandemic challenges.

Another recurring theme that highlights the significance of visionary and adaptive leaders was continuity and capability-building. These findings demonstrate strong implementation of training programs as they continuously build digital competence among leaders and teachers. Zhu et al. (2025) emphasize that digital leadership is essential for navigating complex reforms and fostering institutional resilience. In contrast, leadership disruption had an impact on the overall performance of a school due to a lack of succession planning, improper documentation, and failure of the leadership turnover process. Disruption is prevented through strengthened collaborations for integrated planning with stakeholders and adherence to policies aligned with SDG 4 targets. Zancajo et al. (2022) noted that countries with implemented governance structures were better positioned to maximize digital reforms during the pandemic.

Table 4. *Recurring Themes and Policy Narratives*

Theme	Policy Narrative	Representative Insights from the Document
Leadership Continuity and Disruption	Leadership stability is essential for reform sustainability; disruptions stem from turnover, lack of succession planning, and reactive governance	Documents highlight the need for institutional memory, mentoring systems, and strategic leadership development to maintain reform momentum
Digital Transformation and Innovation	Digitalization is framed as both a necessity and a catalyst for systemic change	Reform texts emphasize infrastructure investment, AI integration, and digital pedagogy as tools for modernization and resilience
Teacher Capacity and Professional Development	Teachers are central to reform success; digital competence must be continuously built	Policies advocate for scalable training programs, digital literacy, and

		pedagogical innovation to empower educators
Equity and Inclusion	Reform must address the digital divide and promote inclusive access for all learners	Narratives stress gender equity, rural connectivity, and universal design principles to ensure no learner is left behind
Governance and Policy Coherence	Whole-of-government approaches and inter-agency coordination are vital for effective reform	Documents call for integrated planning, stakeholder engagement, and alignment with national development goals and SDG 4 targets
Monitoring, Evaluation, and Data Use	Evidence-based decision-making strengthens reform implementation and accountability	Reform strategies include digital dashboards, learning analytics, and feedback loops to guide policy adjustments and resource allocation
Crisis Response and Resilience	COVID-19 exposed systemic vulnerabilities but also accelerated innovation	Emergency remote teaching and hybrid models are framed as transitional strategies toward more resilient education systems

The data shown in Table 4 also pointed out emerging inclusive and equitable interventions as core narratives that bridge digital divides, particularly for marginalized learners. UNESCO (2023) emphasized that inclusive digital education was crucial in fulfilling the equity dimensions of SDG 4, especially in low-resource contexts. Finally, monitoring and evaluation of a recurring theme, with policy documents promoting data-driven decision-making, digital dashboards, and feedback loops to guide reform adjustment.

5. Conclusion and Recommendations

5.1. Conclusion

The sustainability of leadership continuity in education is through deliberate and collaborative strategic planning, mentoring, and capacity-building initiatives. Teachers, stakeholders, parents, and students should be included in strategic planning because they were the first people to experience the impacts during the policy implementation and leadership transition. With this, educational leaders can have data-driven decision-making and prevent resistance. On the other hand, leadership disruption often arises from leadership turnover and the absence of effective succession frameworks. This is where advanced succession planning plays a vital role in a smooth leadership transition and proper turnover of documents for the best interests of constituents.

The importance of infrastructure development, digital upskilling, curriculum modernization, inclusive access, and strengthened governance systems was emphasized through various strategic approaches, such as, but not limited to: investment in ICT tools and digital platforms for schools; integration of digital competencies, coding, and media literacy

into curriculum; Public-Private Partnerships (PPP) and digital dashboards for data-driven decision making. Schools and division offices should implement these approaches to modernize and address issues concerning quality education. These reform strategies are aligned with the targets of SDG 4 in advancing quality education (4.1), promoting inclusive infrastructure (4.a), enhancing teacher development (4.c), ensuring equity (4.5), and fostering global citizenship education (4.7).

This study's findings significantly contribute to recurring themes, and policy narratives emphasize digital transformation as a catalyst for systemic reform, leadership as a critical driver of sustainability, equity, and inclusion as foundational principles, and governance coherence as indispensable for effective implementation (Garosi, 2023). These implications strongly support the integration of digital tools and media literacy in education, where school leaders and policymakers should collaborate to implement programs and innovations that foster digital leadership and citizenship.

5.2. Recommendations

Considering the findings, this study recommends a collaborative approach to sustaining education reform through leadership continuity, digital transformation, and policy coherence.

Policy makers and government education agencies must institutionalize leadership succession planning and digital competencies to ensure continuity of reform. National education strategies must be aligned with SDG 4 and Target 4.c by integrating digital transformation, teacher development, and equity into policy design.

Educational leaders and administrators are encouraged to develop sustainable innovations and initiatives that implement digital transformation, enhancing school performance, and invest in digital infrastructure and professional development programs focused on digital leadership, change management, and inclusive reform.

Teachers and educators must participate in digital literacy, pedagogical training, and curriculum modernization to ensure coherence between foundational learning goals and digital integration.

Finally, international organizations and development partners should design support programs that are locally responsive and equity-driven by promoting cross-country learning exchanges on leadership and digital transformation, and fund capacity-building initiatives that strengthen institutional resilience and foster inclusive education ecosystems.

Declaration of AI Use

The authors affirm that generative artificial intelligence (AI) tools were used solely as support for drafting, organizing, extracting, and refining this manuscript. All research design, data collection, analysis, interpretation of findings, and final conclusions were conducted and validated by the authors. The AI tools did not generate any original research content or analysis beyond editorial assistance. The authors take full responsibility for the integrity, accuracy, and originality of the work.

Conflict of Interest

The authors declare no conflict of interest related to the conduct and publication of this study.

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